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Summer 2011

.....from the Editor

Norm Schmidt

I have used this space to urge readers to consider the downside of plastic in the environment many times in the past. Here I go again.

The other night I lay in bed listening to a late program on WCPN about Midway Island.

I remember hearing about Midway Island as a prime piece of land that was sought by both the Allies and the Axis powers during WWII. Lots of lives lost in battling for a small island *midway* between the American and Asian continents.

The program said that prior to the war, and since the military left, the island is a home for many sea birds including Albatross'. There are no predators for the birds with their nine foot wingspan and ability to soar for hundreds of miles each day in search of food. They lay their eggs on the ground, in the open, since there is no need to hide them.

When the eggs hatch the adults go in search of food that they find on the ocean's surface. Small squid and other floating fauna are their preferred fare.

Unfortunately, the tremendous amount of plastic material in the central pacific gyre has also caught the eye of the adults. They think the bottle caps and pen tops are prime food. They feed their young and the young die. They cannot digest the

plastic and much of it is too big to pass through their cloacae, so it accumulates and eventually causes death.

I remember reading about varieties of fish that move to the surface in the night to feed on plankton. They too mistake small plastic particles for food and when it is time to descend into the depths where they are safe from predators during the daylight hours they cannot. They are too buoyant due to the plastic.

I have little hope that our plastic makers or our lawmakers will take any action to stop the making of very durable plastic for throw-away uses such as packaging and water bottles so I instead put my hope in you. Science educators, you have the power to rally your students. Help them understand that we must stop making plastic for uses that are, well, insane.

Enjoy your summer!

Here are some media for you and your students to view:

Journey to Midway <http://www.midwayjourney.com/>

1986 Time Magazine Article: <http://www.time.com/time/magazine/article/0,9171,961534-2,00.html>

Worlds Biggest Garbage Dump <http://www.youtube.com/watch?v=XxNqzAHGXvs&feature=related>

Midway: Message from the Gyre <http://www.youtube.com/watch?v=gbqJ6FLfaJc>

Oceana: See Pg. 15: <http://na.oceana.org/>



Presidential Column

Vicki Searles, President
CRCST

Exploring the Cultural Self: How does it Pertain to Teaching Science

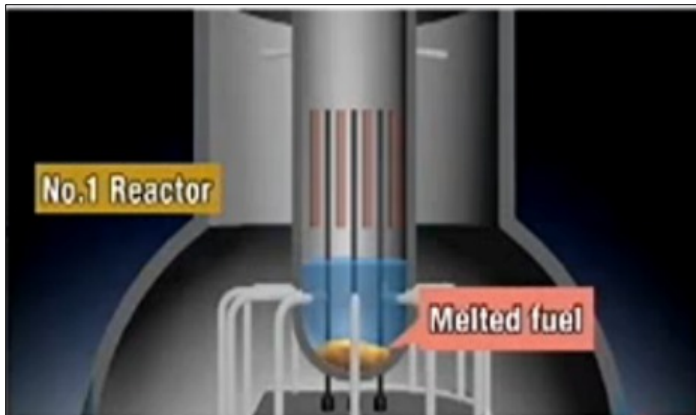
Have you ever thought about how your background affects your work with other educators, administrators and your students? My experience traveling to a few different countries and working with conservationists to varying degrees from Venezuela, Peru, Australia, South Africa and here in the United States, has taught me that understanding the culture of the people of that country and focusing on working WITH the people in the program's home country is possibly even more important than what the biology of the program includes. I could be the best scientist in the world, but if I can't effectively partner with those in-country, chances are, the project we are working on will never succeed. How many of your students do you think will have what it takes or have the desire to get involved in the environment or the conservation of our wildlife and wild places? Are you properly preparing them to be open minded and considerate of others' differences? In addition to excelling in the sciences, will they have the social skills necessary to restore our country's leadership role in the sciences? Will they be able to relate to people from all backgrounds, and be skilled at influencing in a respectful way? If you aren't sure about the answer, the first step may be to look at yourself and to reflect on how your background may help or hurt you as you prepare this country's future scientists. Cont. on Pg. 10



Science in the News

Fukushima Reactor Experienced a Partial Meltdown, TEPCO Says

POSTED BY: JOHN BOYD / FRI, MAY 13, 2011 - FROM THE IEEE SPECTRUM



Editor's Note: John Boyd is an IEEE Spectrum contributor reporting from Kawasaki, Japan. This is part of IEEE Spectrum's ongoing coverage of [Japan's earthquake and nuclear emergency](#). For more details on how Fukushima Dai-1's nuclear reactors work and what has gone wrong so far, [see our explainer](#).

The nuclear fuel rods in the No. 1 reactor of the crippled Fukushima nuclear power plant reactor have suffered at least a partial meltdown, [Tokyo Electric Power Co.](#) (TEPCO) announced yesterday.

The discovery brought plans to flood the No. 1 reactor's containment vessel—a preliminary step to installing a new cooling system for the damaged reactor—to an untimely halt. A government minister said the situation was serious enough that TEPCO's "[roadmap](#)," the schedule that aims to bring the plant to a cold shutdown in less than nine months, would have to be reviewed.

TEPCO apparently learned about the meltdown early on Thursday. Workers had gone into the No. 1 reactor building earlier this week to adjust a water gauge in the reactor vessel and other instruments; the resulting data showed that the water level in the reactor vessel had fallen below the fuel rods leaving them at least partially exposed.

A TEPCO official told the press on Thursday that it seems likely the fuel rods have at least partially melted "and fallen to the bottom of the reactor. So it can be said the No. 1 reactor is a state of meltdown."

The good news is that there appears to have been enough water at the bottom of the reactor's pressure vessel to cool the molten fuel, given that the temperature remains relatively stable between 100 degrees C and 120 degrees C.

The bad news is that TEPCO suspects that the molten fuel damaged the bottom of the reactor pressure vessel, allowing radioactive water to leak out of the pressure vessel and into the building. This scenario would explain the high radiation levels that have been measured in different parts of the reactor building, despite the [use of air-filtering equipment](#) that was meant to decontaminate the air and bring down radiation levels before workers entered the building on Monday to survey the situation.

Banri Kaieda, head of the Ministry of Economy, Trade and Industry, told reporters that the meltdown was sufficiently serious that "it will require a review of TEPCO's schedule for bringing the plant under control." The revised plan is to be announced on May 17.

In a press conference on Friday, Japan's chief cabinet secretary Yukio Edano said that after studying various data, including the temperature and pressure of the reactor, "we believe that when it comes to the safety and security of the residents, it does not mean that the situation has been aggravated."

Edano added that aside from this new development there had been other developments and changes affecting the TEPCO roadmap since it was announced, so it was already being reviewed, and these latest setbacks would also have to taken into consideration. "The leakage of water (in the No. 1 reactor) is apparently much greater than was assumed. So this is one factor that will have to be born in mind (in reviewing the schedule). And they have not identified the cause of the leakage yet. So they will have to investigate it properly and take whatever action is needed."

TEPCO is reported to have injected some 10 000 tons of water in total into the containment vessel and the pressure vessel of the No. 1 reactor since March, yet the pressure vessel apparently remains less than half full. And while [radioactive water has pooled](#) in the adjacent turbine building basement and an outside trench, the water levels have not been rising in those locations, indicating that the water is flowing elsewhere.

One possibility is that the water is leaking into the reactor building basement, which no one has entered since the accident. The company is considering sending a robot into the basement to assess the situation, CONT. on Pg 4

The Cleveland Technical Societies 65th Annual Scholarship Event

CTSC provides college scholarships to the most outstanding STEM seniors every spring at a gala event. This year 21 seniors received scholarships. One of the scholarships was provided by CRCST & CRABS. Here are some photos from the event held on May 2, 2011 at Windows on the River.



Above, L to R: CRCST Pres-Elect Renata Brown and Mike Hickey enjoy the soiree; Past CTSC Pres & CRCST editor, Norm Schmidt chats with Mr. Elios; Renata & Norm solve major world problems. Clockwise from Right: Longtime CRCST member and renowned Chemistry educator from Magnificat, Betty Dabrowski; Renata presents the CRCST/CRABS scholarship to Aobo Guo from Hathaway Brown; Renata & Aobo smile; Scholarship winner, Ariel Minardi from Kirtland HS [editor's alma mater]; Norm receives recognition for his service as CTSC past-pres. from current President, Gary Coubrough; Mike Hickey, current CRCST & CTSC board member and Renata Brown, CRCST President-elect, discuss global climate change.



but has expressed concern that radio contact with the robot could be lost as it makes its way farther into basement.

‘Physically active learning’ improves test scores, sharpens concentration

Advocates point to a growing body of research linking physical activity to cognitive ability

eSchool News - May 16th, 2011

Read more by [staff and wire service reports](#)

Some experts believe that physical learning could pay serious dividends in the classroom.



Tabatha Gayle crab-walked across the classroom last week, racing two other students to a pile of papers listing different diseases, set in the middle of the floor in Ms. Forcucci's health class.

While her teammates cheered, Tabatha picked up a piece of paper and scuttled it over to the whiteboard, dropping it into one of five pathogen categories lined up there. Then she ran back to the team, laughing.

Amanda Forcucci's class at Hamden High School in Hamden, Conn., is doing something called "physically active learning" in the classroom. The idea is to get kids up and moving around during regular academic classes to improve their ability to concentrate.

"It's fun, and moving around actually will help me remember the types of pathogens," said Tabatha, 15. "Plus it helped me to get out of a bad mood."

At a time when recess time is shrinking, childhood obesity is expanding, and everyone's worried about the academic achievement gap, some experts believe that physical learning could pay serious dividends in the classroom.

The concept is that short bursts of exercise during class

can help students stay engaged, concentrate better, and do better on tests.

As a result, the Connecticut Department of Education is trying to get the message out and encourage teachers to include these exercise bursts in their classrooms. The department has been sending a cadre of physical education trainers around the state to show teachers how to incorporate physical activity in their lessons.

Physically active learning doesn't mean recess or gym class or activities before or after school. It involves taking a short break in class to move around or incorporating physical activity in a lesson.

Portland High School teacher Lisa James, for example, sometimes introduces a game of musical chairs into her lesson. After students read a story, she'll make true and false statements about the story, and her students race to sit down when they hear a false one.

"It's more fun that way, but they're also more focused and more engaged, and their behavior is better," James said.

NSTA's National Conference on Science Education

**Indianapolis, IN
March 29 - April 1, 2012**

Professional Development Strands:

- Mapping Our Way to Success Through the New Core Standards
- Pathways to a Sustainable Planet
- Merging Inquiry, Creativity and Innovation Through STEM
- Traveling New Instructional Roads Through Technology

Visit www.nsta.org for updates

Note: Since the national conference will be in nearby Indianapolis, there will be no SECO conference in 2012.

Emerging research is finding strong ties between physical fitness and academic performance. The idea is that exercise makes the heart beat faster, pumping oxygen to the brain and improving the ability to think.

“Research is showing us very persuasively that if students exercise for sustained periods of time before they do challenging work, they perform cognitive tasks better, they remember things better, they can apply their skills better,” said Jean Mee, a physical education and school health education consultant for the state Department of Education.

Jeremi Yakerson, 15, one of Forcucci’s students, said staying active in class helps him stay alert and remember the material better.

“I think it really helps me when it comes to quizzes and stuff like that,” he said

Some schools are starting to see the possibility of using exercise to improve test scores. The principal at Portland High School was so inspired by James’ physically active “brain breaks,” that she decided to have all sophomores exercise right before they took their CAPT test this year.

“When you show people that it’s doable and that it’s purposeful, a lot of teachers really take to it,” Mee said.

The approach also has been shown to improve attendance and student behavior and reduce discipline referrals. It is particularly beneficial for wiggly students who have a hard time sitting still and focusing.

Forcucci also had students doing jumping jacks and switching desks in her class. By the end of it the students looked a little flushed, and they laughed and were engaged the entire time.

In Connecticut, as in other states, the focus on mastery test drilling and other demands on teachers and principals have eroded recess time and gym class in many schools.

Only 75 percent of schools in Connecticut provide 20 minutes of recess daily. At the same time, physical education

has dwindled to an average of one hour a week. That is less than half the national standard of 2.5 hours a week for elementary-age students and 3.75 hours a week for middle - and high school age students. Not surprisingly, students’ physical fitness scores have remained flat as well.

“One of the main things we need to do is to remind administrators of the logic of this approach, so they are more encouraging of it,” Mee said. “This is shifting the paradigm. It takes planning, but it’s highly doable.”

While Connecticut is just getting the word out, the physical learning movement has swept through some other states in one form or another. From Maine to Mississippi, kids are sitting on exercise balls instead of desk chairs, using them to help kids sit up straight, be less antsy and focus better. In Fairport, N.Y., elementary school kids do jumping jacks and jump rope between lessons. In Olympia, Wash., elementary school students take mini exercise breaks to dance across the floor, roll their shoulders and reach for the sky to refocus.

“Many people have been encouraging more exercise in classrooms for a long time, but there hasn’t been a focused message,” Mee said. “Now we are trying to broadcast it as a really big message.”

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Study Finds Sudden Insights Key to Learning Words

Published Online: June 6, 2011

Published in Print: June 8, 2011, as **Word-Learning Study Finds Sudden Insights Trump Flash Cards**

By **[Sarah D. Sparks](#)**

Premium article access courtesy of Edweek.org.

Parents and teachers often use flashcards and picture books to teach young children new words, but a new study suggests that understanding basic words may come from a

flash of initial insight more than repetition.

“What we know is children are getting a lot of input from their world, and they are teasing out what information is useful or not useful,” said Janice H. Im, the interim chief program officer for the Washington-based nonprofit Zero to Three: the National Center for Infants, Toddlers and Families. “If language experiences are not rich, then where is your interest to retain them?”

The [study's findings](#) suggest that children—and, in fact, all new language learners—can build up concrete vocabulary from interacting with a complex learning environment, not just repeated exposure to words in isolation.

In a study published in the May issue of the *Proceedings of the National Academy of Sciences*, researchers at the University of Pennsylvania and Harvard University conducted a series of four experiments on how adults and preschool children learn the meaning of unfamiliar words. The researchers focused on so-called “seed words,” basic nouns that form the foundation for text comprehension.

Repetition vs. Insight

Many language-development researchers believe children learn a new word gradually, taking a general meaning from encountering it multiple times in various contexts and gradually arriving at a more specific meaning. By contrast, the researchers for the new study argue that people instead make a best guess about a new word’s meaning based on the context in which they initially encounter it, and hold onto the meaning unless it is clearly found to be wrong.

“Where people were learning gradually, they were learning the wrong thing. They got more and more abstract descriptions in order to cover all the examples,” said Lila R. Gleitman, a study co-author and a psychology professor at the University of Pennsylvania in Philadelphia. “But little children don’t learn that way at all; they learn concrete before

the abstract; they learn doll before they learn toy.”

Those learning a new language at any age tend to follow that same early process, she said. In three experiments, including 37 adults and a replication study with a dozen 3- to 5-year-olds, participants watched short video scenes of a mother talking to her toddler in natural environments, like a playroom or a kitchen. The videos were muted to replicate the experience of someone at the very start of language learning, with a single word replaced by either a beep or a nonsense word, to evoke the experience of hearing a new word for the first time. Participants were asked to identify the meaning of the target word from context, which varied from one scene to the next. For a target word meaning “horse,” for example, the “parent” in the film might point to a toy horse and name it directly, or refer to it by saying, “Let’s see the horses today.”

For 90 percent of the scenes, no more than 30 percent of participants accurately identified the word. Of the 7 percent of scenes in which a majority of participants identified the mystery word, all of them were for concrete nouns naming basic groups of objects, such as “ball” and “horse,” which often are among the first gained in a child’s vocabulary. The scenes in which a majority of participants identified the mystery word were considered “highly informative.”

Children mirrored the identification pattern of the adults; they identified the target word in 53 percent of the “highly informative” scenes using common nouns, compared with only 22 percent of the other scenes.

Next, the researchers allowed the participants to try to identify a dozen new mystery words by viewing five scenes for each word; each scene used the word in a different context and across different word orders. If a child learns basic words through association, statistically comparing possible meanings over time, the researchers expected all the participants to improve steadily in their ability to guess the mystery words.


That's not what happened. Instead, participants seemed to make a best initial guess at what the word meant and changed their minds only if the meaning was clearly wrong in a later scene. If they had a highly informative scene early on, 66 percent were able to identify the target word correctly, but their accuracy decreased, rather than increased, after watching the five scenes. Participants who saw the more-informative scenes later in the lineup were less likely to correct earlier misconceptions of the words.

Penn's Ms. Gleitman suggested that people may mentally disregard examples that don't fit a preconceived idea of a word's meaning. "How can you avoid going abstract? Only by forgetting what you learned before," she said. "What you remember is your guess, your one guess. It's the failure of memory that's rescuing the learning procedure—because you don't remember the things that are wrong. It's paradoxical, but that's what seems to be happening."

Moreover, she said, that could explain why educators do not see young children make large numbers of mistakes about the definitions of their first words, even during the first five years when they learn 5,000 to 6,000 words.

Ms. Im of Zero to Three said she has seen similar behavior with children she has worked with as well as her own daughter; children understand the meaning of a specific noun like "ball" before the more abstract "object." "Why we call something 'furniture' or 'chair' is really arbitrary," Ms. Im said. "When children see that, they are able to grasp not only the meaning of a word but how it is used in a particular context."

Fast-Mapping

Bob McMurray, an assistant psychology professor and the director of the Mechanisms of Audio-visual Categorization Lab at the University of Iowa in Iowa City, argues that both the "first, best guess" model known as fast-mapping and associative learning are likely at play in early language development. In a [2008 study](#)  published in *Infancy*, the

journal of the International Society on Infant Studies, University of Iowa researchers showed 16 2-year-olds two familiar toys shaped like a car and a duck, and one new toy. When the toddlers were told, "Get the blicket!" more than 80 percent were able to retrieve the new toy and remember its name. However, after a five-minute delay, the children were not able to name the new object in a group of unfamiliar toys. "This research has demonstrated that learning does occur during a fast-mapping trial; however, the amount of learning from a single fast-mapping trial is insufficient to support full-blown word learning," Mr. McMurray wrote in an essay on the project.

Yet Ms. Gleitman's research may help explain the results of Deb Roy's [Human Speechome Project](#) at the Massachusetts Institute of Technology. Mr. Roy recorded and mapped more than 230,000 hours of video in his son's first three years. Mr. Roy, now the chief executive officer of Bluefin Labs in Cambridge, Mass., found his son's first words were associated with "hot spots" in the home where the words often were used by adults, such as "water" in the kitchen.

Ten of the best school-reform ideas from readers

From competency-based learning policies to more time for creativity, readers weigh in with their suggestions for improving public education

From staff reports **June 6th, 2011**

Read more by [eSchool News Staff](#)

It seems like everyone has an opinion these days on what it will take to "fix" American public education. But research suggests that many of the ideas being touted by some of



the leading school-reform advocates—such as [merit pay](#), [charter schools](#), and [value-added assessment](#) of teachers—have seen mixed results at best.

Recently, we asked readers, via our newsletters: "If you

could recommend only one idea for school reform, what would it be and why?" Here, we present—from No. 10 to No. 1—the best, most original, and most honest answers we received in response.

10. Get disruptive student behavior under control.

Our recent story "[Teacher who video-recorded disruptive student suing over job loss](#)" touched a nerve with readers, many of whom expressed sympathy for the teacher in question and noted that students cannot learn when others are disrupting class.

Better training for both teachers and administrators in how to deal with disruptive students—and support from administrators in removing these students from the classroom when necessary—would go a long way toward improving achievement, many readers noted.

Vinny Esposito, a former teacher and counselor, said he would recommend "a behavior specialist team to determine how best to meet the needs of disruptive students." He added: "Such students must be removed from the classroom, decide to enjoy learning, or be placed in alternative programs."

9. Hold students to higher standards of learning ... without the draconian consequences for failure that encourage schools to 'bend the rules.'

While the No Child Left Behind Act has drawn attention to the needs of students who often were marginalized in the past, its heavy sanctions for schools not meeting Adequate Yearly Progress in every subgroup has led to a "dumbing down" of standards to ensure that more students pass.

Finding a better balance between flexibility and accountability would allow states and school districts to adhere to more rigorous standards without the fear of losing funding as a result, says Emil Butler of the Grayson County Day Report Center.

"'No Child Left Behind' seems to mean 'no child held accountable to any meaningful level of academic achieve-

ment,'" Butler wrote. "Our schools now have no fewer than seven types of high school diploma. The lowest of these is commonly referred to as the 'breath diploma'; if they can put breath on a mirror, they can get a diploma. I deal with convicted felons on a daily basis, and I am appalled at the number of young adults who have high school diplomas but cannot read. In fact, many can hardly write their own names. Most of these folks have convictions for drug-related offenses, and most do not have, and have never had, employment of any consequence. Little wonder, since it would be impossible for them to even complete an employment application. Equally astonishing is the fact that, as reported by the Associated Press in December 2010, almost 25 percent of recent high school graduates fail the U.S. Army entrance test (a passing score for the Army is 31 out of 99; higher scores are required for the other branches of service). The article notes that a typical question is: 'If 2 plus X equals 4, what is the value of X?'"

He concluded: "I'm afraid that 'No Child Left Behind' is ensuring that our country is being left behind."

8. Get rid of grade levels.

Some forward-thinking school systems, [such as the Kansas City, Missouri, School District](#), have begun experimenting with the concept of grouping students by ability instead of age—an idea that Kurt D. Steinbach, a social studies, ESL, and ELA teacher, agrees with wholeheartedly.

"End age grading. In other words, end the practice whereby students are assigned and assumed to be in or on their proper grade level according to their age instead of their (demonstrated) ability level," he wrote. "No more age grading would eliminate the need for social promotion and the stigma associated with being held back. With students at different 'grade levels' in each subject area, the problems for students not reading and writing at the 3rd grade level by the end of the 3rd grade (after which students take two years to catch up for every year they fall behind) would disappear."

7. Raise the bar on teacher (and administrator) certifi-

cation.

Higher standards for becoming a teacher or school administrator was an idea favored by Atila Mantels, an editor and public relations chair for Kiwanis Club of Pulaski Heights in Little Rock, Ark.

“Do not issue a teaching certificate to anyone who cannot score at least 19 on all four sections (English, math, reading, science) of the ACT—this score is slightly below the ‘grade-level’ score for high school seniors,” Mantel wrote. “Ideally, the same requirement would apply to anyone serving as an administrator within the educational system. Though my suggestion for educational reform comes at least two decades too late for implementation, it still targets the essential problem of an entrenched educational bureaucracy staffed by undereducated educators.”

6. Open community-based computer centers so children from low-income families aren’t left behind.

“Create computer centers, staffed by trained, paid teachers in community centers and churches that are in our poorest neighborhoods,” recommended Terri Yearicks, network manager and ITV director for Griffin Elementary School in

Florida.



“The biggest trend I see is the incorporation of online education [in] K-12. In fact, here in Florida, it has become state law

that every student take one online class in order to graduate high school. While the idea is good, it does not provide computers and internet access to our many poor students. I work at a Title 1 school with an 83-percent poverty level, so I speak from experience. These centers need to be totally funded, including the teacher’s salary of no less than \$20 an hour, by local businesses. The businesses would then have better trained young people and would receive a tax write-off for their involvement in the project. In addition, teachers struggling to make ends meet can choose to work

the few extra hours a day to supplement their waning income. Plus, this would give our poorest students access to technology so that truly, NO child will be left behind!”

5. Invest more money in school librarians and media centers.

At a time when many school districts [are cutting school librarian positions](#) to close widening budget gaps, reader Rebecca Vasilakis believes districts should be doing the exact opposite. Well-trained librarians and well-stocked school media centers, she says, are essential for helping students learn key information literacy skills—and for helping teachers integrating digital resources into their instruction.

“I would upgrade or place in every school a school library media center that functions as a Learning Commons and staff it with a school librarian (teacher librarian [or] library media specialist) who takes learning into the 21st century,” Vasilakis wrote.

4. Move from seat time to learning competency as a basis for student promotion.

Competency-based learning is “a fundamental reform, a requirement for next-generation learning, and creates a student-centered focus that changes all of our assumptions about the current system—allowing students to move on when ready,” says Susan Patrick, executive director of the International Association for K-12 [Online Learning](#) and a former ed-tech director for the U.S. Department of Education.

3. Boost students’ access to the internet at school and at home.

An earlier suggestion was to make sure there are computer centers for students in low-income areas—but William Burkhead, assistant principal at Plymouth North High School in Massachusetts,



would take that one step further.

“Get every student in America online access at school and at home,” he wrote. “The World Wide Web represents a fountain of knowledge, in the form of information, research, innovation, communication, and growth. I believe this to be a fundamental right of ALL students. Kids without access to the WWW are at a distinct disadvantage and represent the chasm we have in achievement gaps. This is a solid starting point for reform, as it levels the playing field for all students. Before we can talk about having an iPad in every student’s hand at school, let’s make sure every student has access to the world [from wherever they are].”

2. Less testing, more creativity and inspiration.

“Let teachers teach. Education is too involved in testing, as if test scores are the goal of education,” wrote David Wickemeyer, student magazine advisor and technology volunteer at Union Middle School in San Jose, Calif.

“Testing cannot score creativity, insight, [or] new ways of looking at things—these are the skills more important in the real world.”

He continued: “Employers don’t care if you scored a 689 on SAT Math Level II. They want to know if you can solve problems, see a project through, come up with new ideas, even work well with others (not a socialist idea alone). If I was Harry Potter, with my magic wand, I would free all teachers from the bonds of standardized testing (which isn’t standardized at all) and let them freely teach.”

1. Help policy makers truly understand the needs and challenges of public schools—and their students.



Virginia Anderson, district instructional technologist for Columbus Independent School District in Texas, had what might be the best idea for fostering real school re-

form that works: “All legislators should be required to teach for one day in an elementary classroom.”

From Pg. 1: Below are some statistics compiled by Dr. Raymond Terrell, Professor, Department of Educational Leadership, Miami University, and Phillip M. Harter, MD FACEP, Stanford University School of Medicine that can help you understand how you compare to others on this earth. After reviewing the statistics, take a stab at completing the exercise to help you identify your cultural identity.

Some diversity statistics about our schools and our world...

In a Village:

Let's say we shrink the earth's population to a village of 100 people, and all the existing human ratios of race, class and gender would remain the same. This village would look something like this.

In this 100-person village, there would be:

- 57 people who are Asian
- 21 people who are European
- 14 people from the Western Hemisphere (both North and South America)
- 8 people who are African

Of the 100 people:

- 52 would be female
- 48 would be male

Of the 100 people:

- 70 would be people of color
- 30 would be white

Of the 100 people:

- 30 would be Christian
- 70 would not be Christian

Of the 100 people:

- 89 would be heterosexual
- 11 would be homosexual

In this village:

- 80 people would live in substandard housing
- 70 people would be unable to read
- 50 people would suffer from malnutrition
- 1 person would have a college education
- 1 person would have a computer
- 6 people would possess nearly 60 percent of the wealth of the entire village

In **our** schools nationwide:

- One in five children lives in poverty.
- 50 percent of school-age children live in single-parent homes.
- By 2020, 46 percent of the school population will be

students of color.
 Currently 20 percent of students are children of immigrants who speak English as their second language. Ten to 12 percent of students identify themselves as gay, lesbian, bisexual or transgender.
 10 to 15 percent of the school population is classified as moderate to severely disabled.

What is your cultural identity?

1. Each of us belongs to a number of cultural groups. These groups reflect our ethnicity, our occupational and vocational cultures, and social groups that shape or reflect our values. Membership in a group is determined by how you identify with the group members, as well as how those group members perceive you. What represents your cultural identity? Develop a list of adjectives that describes the roles and groups with which you identify:

Complete sentence stems: "I am a(n)..." For example,

I am a(n)
 African American
 woman
 educator
 college graduate
 teacher
 administrator
 European American
 Hispanic American
 Asian Pacific Islander
 mother
 husband
 significant other
 partner
 Buddhist
 Christian
 swimmer
 painter
 member of the middle-class
 daughter
 brother

In compiling your list, it might help to consider the following questions:

In what city were you born?
 What is your current city of residence?
 What is/are the country/countries of your family/families of origin?
 What language(s) do you speak? What dialect do you speak of that language?
 With what part of the state, country or world do you most associate?
 What is your occupation?

Where did you attend high school, college, graduate school?
 What is your sexual orientation?
 Do you have or hope to have children?
 To what religion do you belong, or how do you see yourself spiritually?
 What is your favorite restaurant or type of food?
 How do you spend your free time; what is your favorite hobby or leisure activity?
 What's your favorite movie?
 What's your favorite television show?
 What's your favorite kind of music?
 In which arts (theatre, ballet, opera, live music, etc.) do you participate or like to attend?
 What sports do you play, or what sports do you watch?
 For what organizations do you/have you volunteered?
 What is your astrological sign?
 What's your favorite season of the year?
 Do you have any pets, or what are your favorite animals?
 What is your most significant family value?
 With what political ideology do you align yourself, or what are your political beliefs?

2. Once you come up with a list of descriptors, rank the list of adjectives according to how you describe yourself. Now consider:
 What criteria did you use to rank the descriptors?
 What surprised you about your list?
 How will you use this information?

3. With which three groups do you most strongly identify?
 How are you like the members of these groups?
 How do you NOT fit a stereotype of these groups?
 How does your involvement in these cultural groups influence how you are perceived or how you perceive the world?
 How does your involvement in these cultural groups affect how your students perceive you or how you perceive your students?
 How might this exercise affect your work with other educators, parents, and your students?

4. Finally reflect on what you learned about your cultural "self" and how your cultural "self" affects how you teach. Is there anything you will change as a result?

Adapted from the book, Cultural Proficiency: A Manual for School Leaders, by Randall Lindsey, Kikanza Nuri Robins, and Raymond Terrell, 1999, Thousand Oaks, CA: Corwin Press Inc. Also from Project Dragonfly 2011, Miami University

The Spring Symposium at the Cuyahoga County Solid Waste District Offices



Clockwise from top left: The site; Engaged with the keynote; Suzie, Sally & Mike; Keynote speaker and SECO pres. Tracy Cindric; Our host Kathleen; Suzie, Tess & Maureen; Andrew's session; KSU education students present; Norm & Ray; Renata & Nancy; Gene, Bill & Vicki. Center-middle top to bottom: Andrew Smith; Vicki Searles current CRCST President

Opportunities for Teachers and Students

Order Classroom Materials from NASA

NASA Central Operation of Resources for Educators (CORE) is your classroom resource connection for STEM educational materials that are NASA produced. CORE distributes NASA's educational materials to educators around the world. It has many materials available that include everything a teacher needs to teach a complete science unit. CORE can even customize your order for your specific classroom needs.

Science educators can benefit from the wealth of information that NASA has available to enhance their activities. Contact CORE to request your free resource packet at nasa_order@lcjvs.net or 440-775-1301.

Earth Science Week 2011 Toolkits Available for Order

Earth Science Week 2011 will be celebrated October 9–15. To give you plenty of time to prepare, the American Geological Institute (AGI) is now accepting advance orders for the 2011 Earth Science Week Toolkit, which contains educational materials for all ages that correspond to this year's theme of "Our Ever-Changing Earth." The toolkit will be sent in August 2011.

The 2011 Earth Science Week Toolkit provides the traditional theme-related activity calendar and classroom activity poster published by AGI. It also features a variety of educational resources from program partners, including National Park Service resources on fossils and geology, a Rite in the Rain mini-notebook, and water experiment materials from the American Chemical Society.

Government agencies such as NASA, the U.S. Geological Survey, and the U.S. Fish and Wildlife Service have all contributed educational materials. Learn about fossils, geological heritage, Earth from space, the New Madrid earthquake, and much more in this year's extensive toolkit, filled with posters, brochures, bookmarks, fact sheets, postcards, and more.

AGI leads Earth Science Week annually in cooperation with its sponsors and the geoscience community as a service to the public. Each year, community groups, educators, and interested citizens organize celebratory events. Earth Science Week offers the public opportunities to discover the Earth sciences and engage in responsible stewardship of the Earth. Earth Science Week is supported by the U.S. Geological Survey, the AAPG Foundation, NASA, the National Park Service, ExxonMobil, and ESRI.

To learn more about this week and to pre-order your 2011 Toolkit, please visit the Earth Science Week site at www.earthsciweek.org or the [AGI Publications page](#). You may also call the AGI Publications department to place your order at 703-379-2480.

Summer Workshop on Improving Engineering Education

Online registration for ASEE's upcoming workshop, "[Collaboration Can Improve Engineering Education](#)," is now open. This program for K–12 teachers, educators, and administrators will be held Saturday, June 25, 2011, in Vancouver, British Columbia, Canada.

Register now and learn fun, new ways to get students excited about science, technology, engineering and math (STEM). This energizing, highly informative event will introduce you to innovative, effective engineering education instruction, best practices, take-away tools, and valuable networking. It is FREE to teachers who [register](#) by June 10.

For additional information, contact Libby Martin, K–12 Meeting Coordinator, American Society for Engineering Education, 1818 N Street NW, Washington DC 20036, k12workshop@asee.org.

National Board for Professional Teaching Standards Accepting Applications for Science Standards Committee

The National Board for Professional Teaching Standards (NBPTS) is accepting applications for the committee responsible for reviewing and revising Science Standards in early adolescence and adolescence through young adulthood. Early adolescence refers to teachers of students ages 11–15. Adolescence and young adulthood refers to teachers of students ages 14–18+.

The application is available [online](#) and will be available through May 31, 2011.

Please visit the [NBPTS website](#) for information about the duties and responsibilities of standards committee members.

For assistance or additional information please contact NBPTS at nominations@nbpts.org.

Wildlife Conservation Society's Online Teacher Academy

Become our newest member this summer and revitalize your love of nature and discover WILD ways to inspire your student's interest in learning.

Academy Courses will expand your knowledge, enhance your expertise and advance your teaching practices. Providing a unique opportunity to examine the life sciences of zoology, ecology and conservation, the *Online Teacher Academy* offers learning with:

- *Interactive* online learning
- Most up-to-date reports from *WCS field researchers*

- *Best practices in science education*
- *Ready to use curriculum and resources*
- *Teachers from throughout the United States and around the world*
- *Dynamic facilitators*
- *Graduate credits*

Summer 2011 Courses:

- (FREE!) Ocean Divers: Seals and their Relatives
- [Marine Biology for Educators](#)

Fall 2011 Courses

- [Predators: Biology and Conservation](#)
- [Habitat Ecology for Educators](#)

Interested? Know someone who might be?

www.wcs.org/elearning

New Report Say Elementary Teachers Critical to Advancing STEM Education

A new [report](#) released earlier this month by the Center for American Progress, contends that an often neglected but critical focus on improving STEM learning in U.S. school is a concerted emphasis on strengthening the selection and preparation of elementary school teachers so that they can adequately teach math and science to students.

“We cannot wait any longer to get serious about STEM policy,” said the report. “Strengthening our elementary school teachers in math and science is the first critical step in the right direction.”

The report includes five specific recommendations:

- Implement teacher compensation policies that make elementary teaching more attractive to college graduates and career changers with strong STEM backgrounds;
- Include more math and science content and pedagogy in schools of education;

Require teacher candidates to pass math and science subsections of licensure exams; and

Explore innovation staffing models that extend the reach of elementary level teachers with an affinity for math and science and demonstrated effectiveness in teaching them.

Teacher Education, Professional Development, and Grant and Award Opportunities

2012–2013 Fulbright Scholar Competition Now Accepting Applications

The [2012–2013 Fulbright Scholar Program](#) competition has opened. U.S. citizens with a Ph.D. or equivalent professional/terminal degree (including a master's depending on the field) are eligible to apply. The core Fulbright Scholar Program sends 800 U.S. faculty and professionals abroad each year. Grantees lecture and conduct research in a wide variety of academic and professional fields. Applications are due August 1, 2011.

Win a \$2,500 Gift Card for Your School with the Make My LabWoRx Video Contest

In honor of the flasks, beakers and pipettes that help bring science to life for your students, Science WoRx invites you to celebrate National Lab Day by entering the 2011 Make My LabWoRx challenge!

This year's challenge is a Facebook video contest with a big prize on the line: The winning teacher's school will receive a \$2,500 gift certificate for lab equipment! Entering is as easy as 1, 2, 3:

1. Record a two- to five-minute video of yourself performing and explaining a cool science demonstration.
2. Share your demonstration with the Science WoRx community of science educators by 12 noon ET on Friday, June 24 th, 2011.

Get your friends, family and colleagues to “like” your video by 12 noon ET on Friday, June 24, 2011. The video with the most “likes” wins! (Hint: the earlier you submit your video, the more time you'll have to generate “likes”.)

To enter the Science WoRx “Make My LabWoRx” challenge, visit and become a fan of the Science WoRx online community forum on Facebook, where science teachers come together to network with peers, access tools and resources and exchange ideas to advance their careers (www.facebook.com/scienceworx). Once there, click on “Make My LabWoRx” on the left panel menu bar to review the eligibility criteria and instructions for how to enter.

NEA Foundation-Nickelodeon Big Help Grants

[The NEA Foundation-Nickelodeon Big Help Grants](#) are available in the form of Student Achievement grants to K-8 public school educators. The Big Help Grants program is dedicated to the development and implementation of ideas, techniques, and approaches for addressing four key concerns: environmental awareness, health and wellness, students' right to a quality public education, and active community involvement.

Proposals for work resulting in low-income and minority student success with honors, advanced placement, or other challenging curricula are particularly encouraged.

Practicing U.S. public school teachers, public school education support professionals, and faculty and staff members at public institutions of higher education may apply. The maximum grant amount is \$5,000. Deadlines are February 1, June 1, and October 15 each year.

Teacher Resources

K-12 Science Resources from NSF

K–12 science lessons and web resources for teachers, students, and families are available at this [website](#). Choose from subject areas ranging from the Arctic to Physics, and then use the materials to create lesson plans or at-home activities. For example, among the Biology resources you'll find Cornell University's Bird sleuth program for elementary and middle level students, and CellsAlive.com, which has cell-related animations and videos for use in high school and college classrooms.

The Balanced Equation Curriculum

This standards-aligned [curriculum](#) introduces students in grades 9–12 to global sustainability and chemistry's role in developing long-lasting solutions. It features 10 interdisciplinary lessons that involve students in discussions about the importance of considering people, their needs, and their environment. For example, in The Sustainability Corps, students explore the chemistry of healthy water through role play and experimentation with different water filtration techniques.

Spider in Space

In April 2011, an orb weaver spider joined the STS-134 astronaut crew aboard space shuttle Endeavour for a trip to the International Space Station. Now scientists are observing the spider's behaviors in microgravity. With the [Spiders in Space Teachers Guide](#), K–12 students can also participate in this real-life research, comparing ground spiders with the one in space. The guide contains instructions for setting up spider habitats in the classroom and helping students design their own "spider" investigations. Registration is required to download the guide.

Bill Nye's Climate Laboratory

Emmy-award-winning science educator Bill Nye has become Bill Nye the Climate Guy—complete with his own Climate Lab—courtesy of Chabot Space & Science Center of Oakland, California. To accompany its new permanent exhibition, Bill Nye's Climate Laboratory, the center has created an [educational website](#) for elementary and middle school teachers, students, and families. Join Nye on fun missions and activities to reduce energy consumption and thwart climate change. You'll hunt down energy vampires, design a "green" home, grow a virtual garden—and compete to become a climate champion!

Student Activities, Resources, Science Competitions and Grants

Ten80 Student Racing Challenge

The Ten80 Student Racing Challenge features an integrated science, technology, engineering, and mathematics (STEM) curriculum for students in grades 6–12. Student teams work collaboratively to design, build, and race model remote-controlled cars against those of other student teams across the country. The curriculum teaches students about aerodynamic design, chassis setup, mechanical engineering, and math modeling (collecting data and making graphs). Preview a sample activity from the curriculum and learn more [here](#).

Technology Grants

This may be of interest to teachers with a desire to enhance the technology in the classroom. Although there are a very limited number of grants awarded, it may be worth a try.

<http://www.turningtechnologies.com/studentresponsesystem/turningfoundation/k12grants/>

Anticipating the Science Conceptual Framework

In the first installment of a new web series, an NSTA article, [Anticipating the Conceptual Framework for Science Education](#) (PDF), takes an early look at the soon-to-be released framework and explores its development, role, possible content, and relationship to science standards. NSTA's goal is to help science educators prepare for the Next Generation Science Standards by better understanding the framework on which they will be built.

The National Research Council (NRC) and Achieve, Inc., with support from NSTA and AAAS, have embarked on a two-step process to develop science standards. The first step is to develop a Conceptual Framework that is grounded in current research and identifies the science all K–12 students should know. The NRC is conducting this work and is expected to release the framework in late spring. This framework will not only be a guide for developing the standards—a process led by Achieve, Inc.—it will be a valuable resource for many in the science education community.

Check the [website](#) often for updates on the framework and standards work and to read additional articles that take an in-depth look at the content of the Conceptual Framework when it is released.

NSTA Legislative Update: First Bill to Reauthorize the ESEA Introduced in the House of Representatives

Last week House Republicans introduced the first (of what will likely be several) bills to reauthorize the Elementary and Secondary Education Act (No Child Left Behind) and announced the spending allocations for

FY2012 federal education programs. Read all about it in this issue of the [NSTA Legislative Update](#).

EcoTipping Points Offers Free Resources for Environmental Engagement

Following Malcolm Gladwell's perspective that "small things can make a big difference," the [EcoTipping Points website](#) offers lessons from a hundred environmental success stories from around the world—stories in which communities turned environmental and social decline to a course of restoration and sustainability. The [free materials for teachers](#) are described by an article in [The Science Teacher](#).

The most recent addition to the educational materials is the "How Success Works" lesson, which is available in [English](#) and [Spanish](#). It assembles some of the most instructive stories and their messages into a package of powerful and engaging case studies. Each case includes a short video, PowerPoint presentations, written narratives of different lengths and detail, student worksheets to review and explore "Ingredients for Success," and teacher keys. Worksheets include front-loaded vocabulary.

All materials in the "How Success Works" lesson are downloadable as editable Word or PowerPoint files. The package components can be combined and adapted to accommodate all ages.

Questions or comments can be directed to gerry@ecotippingpoints.org.

Hands-On Lab and Field Courses for Science Educators at Montana State University

The Master of Science in Science Education (MSSE) Program at Montana State University has a diverse offering of campus courses this summer that are open to all science educators. Spots are still available in several one- and two-week summer campus and online courses. Highlighted courses include:

- PHSX 591: Night and Day Sky for Teachers
- CHEM 506: Integrating Computers in the Chemistry Laboratory

EDCI 537: Contemporary Issues in Science Education

Come visit Montana and the beautiful MSU campus in Bozeman this summer and participate in exceptional professional development opportunities for science educators. You do not need to be admitted as a graduate student to register for summer courses, but these credits can count toward an MS in Science Education. [Click here](#) to see a complete list of courses and to register.

The MSSE program is also accepting applications for Fall 2011 admission. Pursue a Master's in Science Education degree with 80% of the coursework completed online and a

variety of campus field courses to choose from. Visit the program's website at www.montana.edu/msse for more information.

NEOSEF 2011 CRCST Winning Projects

1. **Sandy Eisler** Biology Award: Amanda O'Reilly, St. Helens Elementary
2. Health & Medicine: Emily Moell, Royal Redeemer Lutheran
3. Environmental: Michael Pallaki, St. Raphael Elementary
4. Behavioral: Catherine Perloff, Beachwood Middle School
5. **Irene Heller** Chemistry Award: Danielle Buchinsky, Agnon School
6. **Sam Brooks** Physics Award: Emily Szabo, Incarnate Word Elementary Academy
7. Earth & Space Science: Jennifer Rosenburg, Solon Middle School

All awards were given for the most creative projects in each category, grades 7 & 8.

The three students winning the named awards received \$100. The named awards honor past distinguished science educators and CRCST members.

The other four awardees were presented with a \$50 prize. Congratulations to all of this year's winners, their teachers and families.

Oceana

This website highlights all of the current problems facing our oceans vis-à-vis the fishing industry and the fraudulent labeling of seafood at the grocery and restaurants. The Monterey (CA) Bay Aquarium has produced a handy reference guide that you can keep with you if you decide to continue to eat seafood from the Ocean, which you can access at: http://na.oceana.org/sites/default/files/MBA_SeafoodWatch_MidwestGuide.pdf. There is also a cell phone application which you can use (I'm clueless about this) with the same information.

