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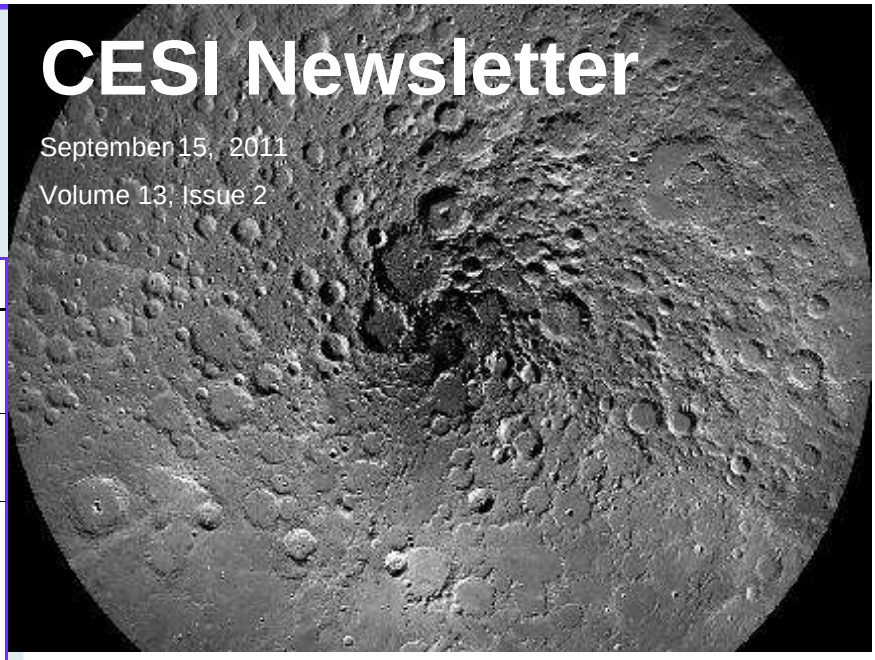
Image Credit: NASA/GSFC/Arizona State University



CESI Newsletter

September 15, 2011
Volume 13, Issue 2

JOIN CESI PRESENTATIONS FALL NSTA AREA CONFERENCES

Hartford
Breakfast, Friday, Oct. 28
(by ticket only from NSTA)
8:30 – 10:30 AM
Loree Griffin Burns
Author: Tracking Trash - Scientist in the Field Series

New Orleans
Breakfast, Friday, November 11
(by ticket only from NSTA)
8:00 – 10:00 AM
Ernest Morial New Orleans Convention Center, Room R02
Steve Rich
Author: Outdoor Science: A Practical Guide

Seattle
Breakfast, Friday, December 9
(by ticket only from NSTA)
8:00 – 10:00 AM
Issaquah, Sheraton Seattle Hotel
David Crowther, Ph.D.
Author: Developing Vocabulary for English Language Learners through Inquiry

NSTA National Conventions

- Indianapolis, IN: March 29-April 1, 2012
- San Antonio, TX: April 11 –14, 2012

2011 NSTA Area Conferences

- Hartford, CT: October 27–29
- New Orleans, LA: November 10-12
- Seattle, WA: December 8–10

USA Science and Engineering Festival
April 28 and 29, 2012
http://www.usasciencefestival.org/

2012 NSTA Area Conferences

- Louisville, KY: October 18-20
- Atlanta, GA: November 1-3
- Phoenix, AZ: December 6-8

International Conferences

The Association for Science Education
University of Liverpool, UK
January 4-7, 2012
http://www.ase.org.uk/conferences/annual-conference/

Barbara Tharp, President

As you may know, I transitioned from President-Elect to President on June 1, 2011. It seems appropriate that my first official duty should be to introduce myself. I am a teacher. I taught elementary 4-5 self-contained and then K-5 science lab (minus a sink) for nine years in Houston Independent School District, the fourth largest school district in the nation. I began my career in education as an alternately-certified teacher with a degree in Business Administration. Even before that, though, I always loved teaching, and started early, by teaching five younger brothers and sisters on our family farm in Oklahoma.

I found the best way make students sit up and listen is to actually do something. During my first year teaching, the class planted and cared for flowers around our old temporary classroom; captured insects, worms and spiders; made waves in a bottle; and learned how to take care of the class pets, including hamsters, an opossum (rescued on site), and an aquarium of Mollies (fish) with ick (a disease)! I made plenty of mistakes, but I was happy to have 34 students who were excited about science and had a million questions.

That was the beginning for me. Once I realized how science could be the "hook," for meaningful learning, I became a science junkie, attending every training available. Much of what I took from those experiences, I learned from other teachers. For me, a community of learners was formed, a community of which I remain proud to be a part.

After nine years in the classroom, I was offered a position that allowed me to share my science experiences with others. That was 18 years ago. Since 1993, I have been involved in many projects to develop elementary curriculum, plan and conduct training programs for elementary teachers, and figure out the best ways to motivate teachers and get them excited about science.

My participation in teacher local associations has been a key to success. It all began with the Metropolitan Teachers of Science Organization, in which I eventually held every office (but not simultaneously!). At the state level, I joined the Texas Council for Elementary Science in 1997. Again, I served wherever I was needed and finally served as President. Now I find myself serving as president of the Council for Elementary Science International. I have been a CESI member for many years, taking advantage of preconference offerings, publications and the famous Annual CESI Make and Take. Over the years, I've learned the critical importance of teachers' involvement in professional organizations, through which they can learn, lead and share. But before they can become involved, teachers must be informed about the opportunities available to them. You will find a wealth of opportunities listed in the newsletter, and soon, there will be a new website to help you navigate the system even more effectively! So dive in! Be the catalysts-recruit CESI members and join us as we make a difference.

As Council president, my goal is to encourage others to take the plunge: get involved and get others involved. I am proud to be here and look forward to working with you over the coming years. Questions? Don't hesitate to email me (btharp@bcm.edu).

Barbara Tharp, left, and conference participants at NSTA Share-A-Thon in Philadelphia, PA, spring 2010.

Science Can Make Kids Feel Great!

By Alan McCormack, Retiring NSTA President and CESI Past President

All of us have observed students who approach science tasks with eagerness and glee. Others, unfortunately, work half-heartedly or not at all, seeming to be bored and disinterested. Then, there are those who are unpleasant and disruptive.

Children's affect, or feelings, have everything to do with how successful they will be in learning. How they feel about themselves, science as a subject, their teacher, and school in general will determine their success as learners. How students feel directly determines their level of motivation to learn. Even the most talented students will not learn if they don't care to exert some effort. If students are to benefit from a science program, teachers must provide a learning environment that engages student affect and encourages engagement in science learning activities.

The Affective Domain of Science Education includes the sum of attitudes, feelings, values, and decision-making skills that comprise each human's view of the world (Yager and McCormack, 1989). In these times of increasingly complex social and political turmoil, environmental and energy problems, and general worry about the future, science programs need to address more than just information, processes, and thinking skills. Human feelings, decision-making skills, and values need to be addressed. Thus, this important domain includes:

- Developing positive attitudes toward science in general, science as a school subject, and positive attitudes toward oneself (an "I can do it" attitude)
- Developing sensitivity to, and respect for, the feelings of other people and exploring human emotions and attitudes
- Expressing personal feelings in a constructive way
- Making decisions about personal values, social and environmental issues
- Overall – feeling the thrill of success!

Some educational traditionalists believe that student affect, and thus motivation to learn, is a stable trait. For instance, psychologist McClelland (1978) maintained that children's achievement motivation is an unchanging trait developed early in life as a consequence of interactions with parents. From this point-of-view, teachers can do little to influence the affect and motivations levels of their charges.

Happily, other psychologists conceive of affect and motivation as a set of conscious beliefs that can be primarily influenced by the amount of success and failure experienced in recent learning experiences. Following this point of view, science teachers have considerable opportunity to enhance students' interest in science and their motivation to learn. Though parents are without a doubt influential on children's attitudes, teachers select which activities are engaged in and the emotional climate of the classroom.

Successful science teachers are good at what they do because they are keenly aware of the need for positive affect in their classroom environments. They keep tabs on student levels of self-confidence, expectations for success, interest, self-directedness, anxiety indicators, and fear of failure. All of these are indicators of classroom affect. Of course, the more positive the affect, the better learning commences.

Reasons for learning, as deeply perceived by students, are key factors in determining general classroom affect. Researchers of student motivation classify the most basic perceived goals for impetus to learn to be of two basic types: extrinsic and intrinsic. Extrinsic rewards include such things as good grades and social approval. Intrinsic rewards involve caring about a learning task because it is inherently interesting and engaging in it provides a sense of deeply personal mastery. Completion of the task is pleasing in itself, with no need for outside rewards such as gold star stickers, compliments, or being allowed to play on the school football squad.

Fortunately, the subject science is blessed with inherently engaging mysteries, challenges, and enticing tid-bits that makes it perfect as a medium for intrinsically-motivated adventures. Science has fascinating organisms to observe performing exotic behaviors, materials that vibrantly change color, float or fly, objects that vibrate, move, spin and entertain in all sort of

(Continued on page 4)

ways. Teachers can introduce demonstrations of discrepant events that are seductive to the human senses and perplex curiosity to begin problem-solving processes. Csikszentmihalyi (1990) applauds the intense involvement associated with complete intrinsic task involvement as flow. While experiencing flow, students can be so intensely attentive to a task as to lose awareness of time and space. Great artists and scientists, alike, report the experience of flow as they become engrossed in their work. Highly successful creative people report experiencing a flow state while doing their best work (Nichols, 1983).Science teachers may have tremendous influence on children's learning goals, and possibility for achieving *flow* states. The teacher who stresses the inherent fascination of science, and deep learning rather than competition for external rewards, will achieve a positive affective classroom environment. In this desirable environment, encouragement of risk-taking and personal satisfaction in learning will foster achievement and a generally happy state of affairs.

Encouraging a Positive Classroom Affect

- Build Students' Confidence: The main science teaching strategy today involves students in inquiry and problem-solving. This requires students to develop some confidence in their own abilities to "see" problems, imagine solutions, and carry out experimental tests. Many kids come to us with a "can't do it" attitude derived from previous negative socialization. They get discouraged and give up when confronted by a problem. To counter this, teachers need to strive for situations wherein each student has opportunity to be successful at some level. Try to find learning tasks that have many different approaches to solution and in which students can be successful at many different levels. By becoming familiar with the skills of each student, you can find problem-solving roles for each student at levels where they are likely to experience success.
- Use Lots of Manipulatives: Students need to learn to independently manipulate objects in the process of problem-solving. In science, a plethora of objects can easily be provided – independent and group experiences with "stuff" is great for building good attitudes. Clay, construction paper, batteries, bulbs, wooden sticks, gears, mirrors – the list of enticing objects is endless. Building simple inventions from the classroom junk box can be very good for improving sagging egos!
- Build on Student's Strengths: Just about everyone has something they really enjoy doing of something they are good at. Schedule a "Me Day" period of time in your classroom program every week where different students get a chance to show off talents, collections, experiences, or whatever they would like top share with their classmates. It may be a pet, trip to Disneyland, musical talent, story, or piece of personal artwork that is "shown off." We all need to brag a little!
- Magic Trick or Joke of the Week: Have students sign up to present a magic trick or joke. Anything that gets them up and performing in front of the group can be self-enhancing.
- Use Lot's of Humor: One teacher I know arranges to have 3 minutes of upbeat music playing as students enter class in the morning. The Theme from *Rocky* or *SpongeBob Squarepants* might be playing, making a vibrant, somewhat humorous classroom atmosphere. Kids tend to mime the lyrics and move to the beat. Another science teacher puts on a ridiculous plastic banana nose occasionally while teaching, pretending nothing is there. Kids love it!
- Install a Bulletin Board for Positives: Create a bulletin board where students can contribute positive news clippings, great slogans, quotes, photos, and personal good news. Have Students Work in Cooperative Groups: Have clearly defined roles for each student capitalizing on their individual strengths look for ways to have individuals feel needed and important in the groups functioning in exploring science challenges.
- Keep a Prop-Box in Your Classroom: Find an old wooden chest and gradually fill it with odd props you can incorporate into lessons. Unusual hats, masks, noses, pointers, capes, and flea market rejects are good. Use these to add a bit of humor at appropriate points, and invite students to add to the collection and feel free to use items in their reports or other activities. Fun and humor build better attitudes!
- Be Upbeat and Dynamic: Model the behaviors you hope will rub off on students. Many of our most memorable teachers are half "ham!" If you truly enjoy the science activities you conduct, so will students.

References:

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- Nicholls, J. "Conception of Ability and Achievement Motivation: A Theory and its Implications for Education." In S. Paris (Editor), Learning and Motivation in the Classroom. Erlbaum Publishers. Hillsdale, NJ. 211-237. 1983.
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CESI SHARE-A-THON NSTA NATIONAL 2011

Top Right: CESI Secretary Michael Vu and conference participant.

Middle Left and Right, Bottom Left: Conference participants and presenters.

Bottom Right: Mary Beth Katz, past CESI board member, conference participant, and ASTA president, Rachel Pace (right)

CESI SHARE-A-THON NSTA NATIONAL 2011

Conference presenters and participants.

CESI LUNCHEON NSTA NATIONAL 2011

Top Left: NSTA Retiring President and CESI Past President Alan McCormack welcomes members to the 2011 CESI Luncheon.

Middle Left: Kahy Horstmeyer, Awards Chair, Muriel Green Award Maegan LaBorde, Baton Rouge, Louisiana

Bottom Left: Luncheon participant and Mary Beth Katz, past CESI board member view the micro-world through a magnifying loupe.

Bottom Right: Luncheon speaker Kerry Reuf, Founder and Director of The Private Eye Project©, lead participants to *see* the world through the eyes of scientists, writers, and artisans using a jeweler's loupe.

CESI LUNCHEON NSTA NATIONAL 2011

CESI Luncheon participants learn how to view the world through a jeweler's loupe and envision the world from the perspective of artisans and scientists.

DIVA

CESI held the first annual DIVA contest, lab coat decorating contest.

Top left: Jeanelle Day, CESI Treasurer won the popular vote with a pink lab coat trimmed with rick rack and a back bow.

Top right: The DIVAs in a row:
Kay Atchison Warfield, past president, and board members/special committee chairs: Mary Beth Katz, Betty Crocker, Jeanelle Day, Melissa Sleeper, and Judith McKee

Are you a Science F a s h i o n Diva?

Strut Your Stuff!

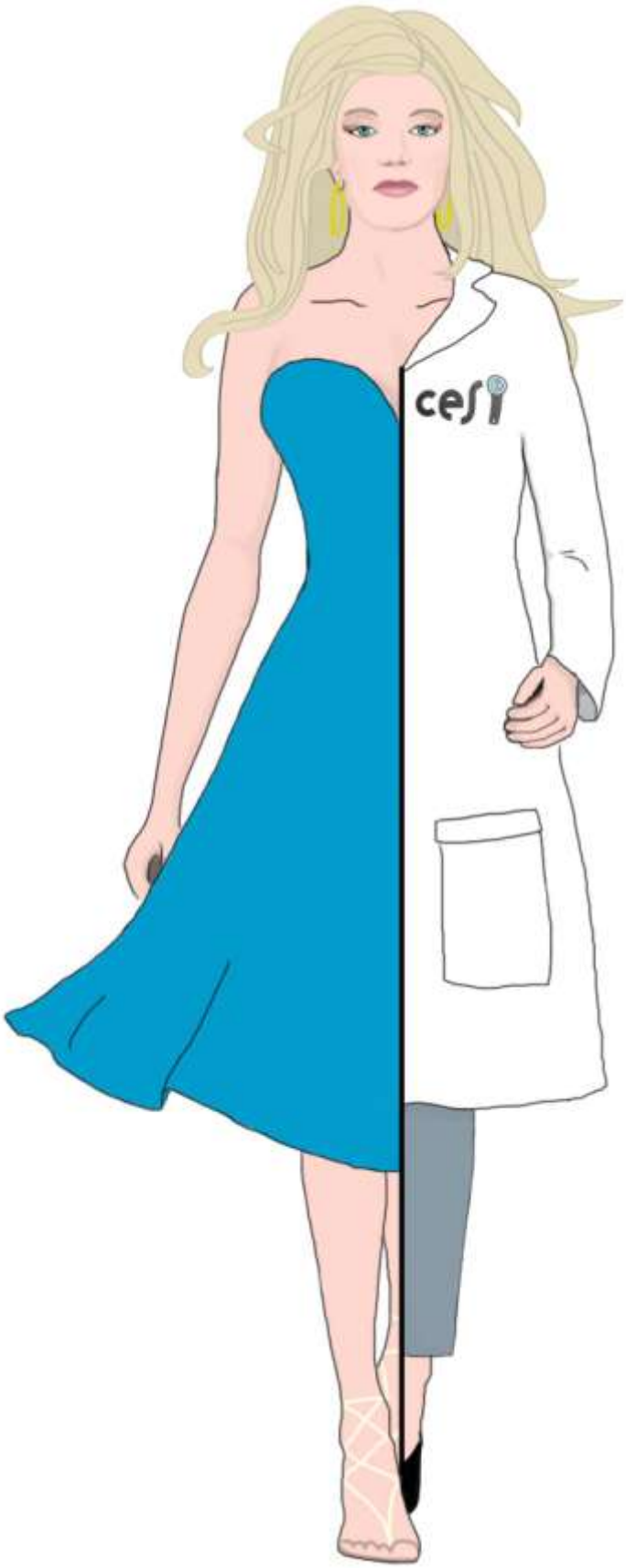
Begin with a standard lab coat and make it your own diva statement! You could win a $200 gift certificate and a year's membership to CESI!

Rules and requirements for competition:

- **Use a standard lab coat.**
- **All materials must be attached to the coat.**
- **Coat must meet safety requirement.**
- **Must be useable in the science classroom.**
- **Entry must include a picture and description of the lab coat suitable for website use.**
- **Provide a description of your creation to be used as you walk down the runway (75 words or less).**

So... Get creative and show off your fabulous lab coat fashions at CESI's Lab Coat Diva Fashion Show to be held during the CESI/NSTA Elementary Science Luncheon, Friday, March 30, 2012 from 12 Noon to 2:00 PM in Indianapolis.

Email your name, photograph of entry, and description (75 words or less) to mailto:btharp@bcm.edu**!**



UPCOMING ELEMENTARY STRAND 2012
Friday, March 30, 2012

CESI will offer two strands just for elementary teachers, K-8. Workshops include:

Jeanelle Day
CESI: Creating the Dynamic Triangle of Science, Literacy and Technology in the Elementary Classroom

Alan McCormack
CESI: Helping Children Imagine and Invent

Jeff Thomas
CESI: Where to go and what to do at the crossroads between trade books, emerging Web technologies, and STEM learning.

Hans Persson
CESI: Science on Board

Willhite, Kathy
CESI: Inquiry, creativity and the learning variation - That's how to teach the Lunar Cycle.

Sue Dale Tunnicliffe
CESI: Who wants to be an engineer?

Melissa Sleeper
CESI: What could the matter be?

Thomas, Julie
CESI: Simple Toys Link the Physics of Sound and STEM

NEW ELEMENTARY SCIENCE JOURNAL!

The *Journal of Emergent Science* is a professional e-journal produced in conjunction with the Emergent Science Network and The Association for Science Education. Sue Dale Tunnicliffe, former CESI board member is one of the editor.

The journal is designed for educators who work with children ages birth to 8 years. Jonathan's Jungle Road Show is one of the sponsors of the journal.

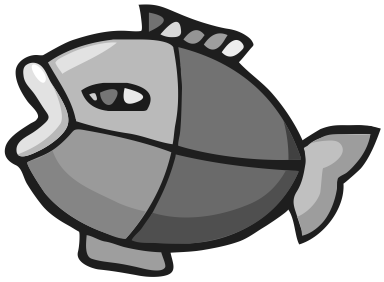
For more information see:
http://www.ase.org.uk/journals/journal-of-emergent-science/

For more information about Jonathan's Jungle Road Show see:
http://www.jonathansjungleroadshow.co.uk/index.html

Participants from Sweden. Far left: Hans Perrson, Sweden and Past CESI President Kay Atchison Warfield.

FISHING FOR INQUIRY

Scaffolded Science Lessons

Karen Ostlund		Sheryl Mercer

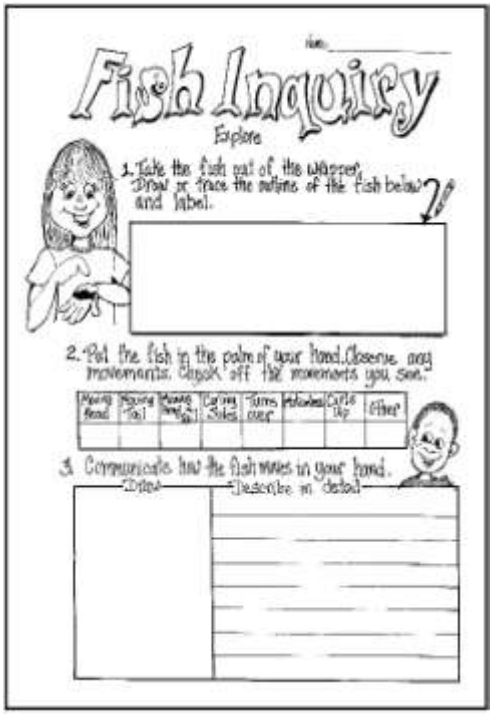
Fishing for Inquiry: Teaching Tips - Explore

Building background knowledge is a critical beginning for all inquiry! The Explore phase provides experiences for students so they can build on those experiences to understand the science concepts being developed. It also provides prior knowledge and base line data for making predictions. The Explore phase of the lesson "levels the playing field" for all your students by providing background experiences and discussions. When one student tells the class what s/he knows, then everyone in the class is given the information.

Materials: Fortune Telling Fish (order from www.orientaltrading.com Item #N-39/761, Price $7.99 for 144 fish)

Procedure

1. Have students take the Fortune Fish out of the wrapper and draw or trace the outline of the fish.
2. Guide them to label the following parts of the fish so they are using the same terms to describe fish movements: head, tail, and sides.
3. Instruct students to place the fish in the palm of their hands and use the chart to check off the movements they observe.
4. Have each student draw and label a diagram to illustrate how his/her fish moved.
5. Then instruct students to describe in detail how the Fortune Fish moved when placed in the palm of his/her hand.



Want more? The full lesson plan is located on the CESI web site.

Click on the link to view the lesson:

http://www.cesiscience.org/resources/fishinquiryte2.pdf

SWEDISH APPROACH TO CREATIVITY IN TEACHING

Swedish approach to Creativity in teaching

Are you interested in how you and your pupils can be more creative in the science classroom, here´s some inspiration from Sweden...

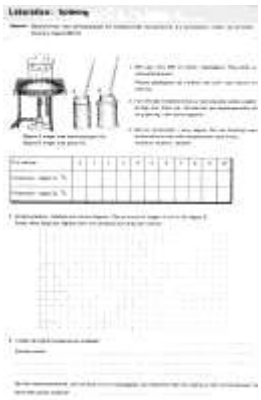
My name is Hans Persson and I´m a teacher education from Stockholm Sweden. My first choice as a profession was to become a teacher and I educated in 1975 from the Institute of Education, in Stockholm as teacher for 9-12 years (secondary level). I've been working ever since in this field in one way or another and I am still enjoying it a lot. So the content of this article is taken direct from my practice as a teacher and as teacher educator.

What I've been trying to achieve in the classroom over the years is something a lot of us science teachers have in common:
1) trying to encourage children to taker greater interest in Math science and technology
2) trying to keep their interest alive

After working for about 20 years as a teacher I was asked to do in service training for other teachers. At that time I also started to document the strategies that I had developed and to this day I have published about 20 books. I have also done a couple of TV-series for children promoting creative science teaching. A couple of year ago I was the first teacher in Sweden to be awarded "the Big Knowledge Prize".

Creativity

As I use the word creativity in the title for this article let us have a look at the meaning of that word for a second. If you check it in the dictionary it says that creativity has to do with "being productive, pioneering or innovative". But if you a look at the traditional way of teaching science it is very obvious that many activities are far from creative. When my pupils opened their physics and chemistry textbooks they very often found something like in the two pictures below. And in



fact this is globally a very common way how science is communicated to young learners.

This was how I was supposed to try to raise their interest in science. This was also how I was going to keep their interest alive and how they where going to learn something about the nature of science and what science was all about. I guess you can all understand why I didn't feel that my science teaching was an immediate success?

So, from my first days as a science teacher I saw a lot of examples where it was necessary to bring in new approaches to the teaching. There was a lot of room for school development in this field and these three sentences from the Swedish curriculum shows that my role as a teacher was to promote creativity and a varied approach.

Anyone who works in the school shall:
• allow for the learner's ability to create and use different means of expression,
• help the students so that they can solve problems and turn ideas into action in a creative manner and so that they may consider different ways of working and working methods

As you can see this is a description of science teaching far from the examples given in picture 1 and 2 where there is only one right answer and only one way to do it.

So much for the background, now let´s move on to some of the activities that I have developed that have worked with pupils and teachers in many countries all over the world.
(continued on page 15)

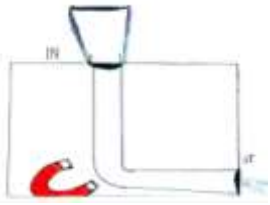
SWEDISH APPROACH TO CREATIVITY IN TEACHING (continued)

The magic bucket: How to do it?

Start this activity by telling the class that you have found a very strange bucket. Then show them that when you pour different coloured liquids (clear, red, green) in the funnel at the top it always comes out clear out of the hose.
Then ask your pupils to draw a picture of what they think the bucket looks inside. Encourage them to write what they think. Tell them that there is not only one right answer.

Put all the pictures on display and talk about the different ideas and also try to let some of them lead to investigations.

What will happen?
You will not just get one right answer and I promise that you will be amazed at the manifold of answers and bright ideas you will get. Over the years I have assembled hundreds of documentations and as you can see below they sparkle with imagination and creativity. These are just a few.



- Magic
- A long hose
- Magnet
- (there is a fairy inside, our teacher is a magician)
- Chemical reaction (a piece of soap, iron sulphur)
- Density (the coloured ones are heavier)
- Filter (sand, charcoal, popcorn!)
- Two compartments
- A rain cloud inside the bucket
- Animals inside (chameleon, leech)
- Biology (a kidney)
- One of my favourites is the boy that wrote "We are colour blind"

As you can see from the children's ideas above the bucket will give you a very good perspective of the pupils prior knowledge in science. But remember that this is not about finding out who is right and who is wrong. It's an open problem and if you really take the children's ideas seriously and try to investigate some of them you will also see that there is more than one way that works. I usually don't open the bucket until we have tried some of the ideas.

One of the most common reactions I get from teachers that have used the magic bucket is that this activity is a really a good way to discover the undiscovered talent in the class.

I use the bucket a starting point for science and as a model for how scientists work.

- Scientist face problems (like what is inside the bucket)
- They come up with different ideas (hypothesis, prediction)
- They investigate if their theory is right.
- The investigations lead to conclusions that can lead to new problems, ideas, investigations….

Just like in real science there is not just one right answer. Scientists usually argue and have a lot of different ideas. So in this way the bucket paints a more relevant picture of the nature of science than the traditional investigations where there is just one way to do it and one right answer

This is an object that works if you want to raise the pupil's interest in science. When I do in-service training with teachers I have also experienced that this is an activity that will raise a lot of primary teacher's interest in science and science teaching. They like it, they feel confident with it and it's easy to see that you can get so much out of the bucket.

(continued on page 16)

SWEDISH APPROACH TO CREATIVITY IN TEACHING (continued)

The chicken: How to do it?

If you look in toy stores I´m sure that you will find this little amazing chicken and when you put it in your hand it will chirp. Turn the chicken over and look at the bottom and you can see that there is a lid where the battery is kept and I guess you also can imagine that inside the chicken there is an electronic device that can give away the chirping sound that you hear when you put the chicken in your hand. You can also see two yellow metal dots and if you put one finger one of the dots the chicken will not chirp but if you put another finger on the other dot the chicken will chirp. So your body works as a switch and this shows that the human body is a conductor for electricity.

Now tell the pupils to line up around the classroom holding each other's hands, just like in the drawing. Place one of your fingers on one of the dots on the chicken and ask the class what they think will happen if the pupil next to you will do the same? Amazingly the chicken will start to chirp. Ask two of the pupils, somewhere in the circle to let go of their hand. The chicken will be quiet. I have done this with over 250 people……and it worked!

Ask two of the children in the circle to hold in the plastic part of a pair of scissors. If both of them hold the pair of scissors between them this way, will the chicken chirp? Then ask them to move their fingers to the metal part of the scissors.

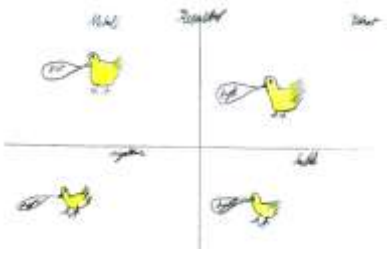
What will happen?

By letting go of your hands in the circle and then connecting again you will get a very concrete picture of the concept "closed circuit". You will also find it easy to talk about how a switch works.

Of course the chicken will not chirp if you try connecting it by holding the pair of scissors in the plastic part between you. Plastic is an insulator and this is why we use this material on the outside of wires. When we move the fingers to the metal the chicken will chirp. Metal is a conductor and used inside wires, to connect things.

You can also ask the children to come up with ideas about what things to investigate if they are conductors or insulators. (paper, water, fabric, glass…)

Just look at these wonderful drawings and I hope you will agree that the chirping chicken is a great tool to promote creative teaching and individual documentation.



(continued on Page 17)

SWEDISH APPROACH TO CREATIVITY IN TEACHING (continued)

The ice balloon: How to do it?

This is an activity that will lead to investigations, documentation and meaningful communication.

Prepare this activity by filling balloons with cold water and put them in the freezer a couple of days before this lesson. Take the ice-balloon out of the freezer and wrap it in newspaper to keep it cold and bring it to the classroom in a paper bag. You can either just slowly take away the rubber from the ice and display the ice balloon on a plate in front of the pupils or you can tell the children that you have found the egg from

a mysterious ice-bird, a bird that no one has seen. Ask them to draw pictures and write about the fantasy ice bird and its ice-egg.

If you just put the ice-balloon on display on a plate, or if you hold it in your hand as in the picture, tell the pupils to come up with questions about the ice-balloon. Try to turn these questions into investigations.

What will happen?
If you use the story about the ice-bird you will get amazing stories and pictures from the pupils.

If you ask them to come up with questions about the ice-balloon these are just a few of the common questions that easily can be investigated.

- *What is it?*
- *How does it feel?*
- *How cold is it?*
- *Why is it round?*
- *How long time will it take before it melts?*
- *Will it float in water?*
- *How much does it weight?*
- *How big is it …and so on*

As you can see these entire question are really easy to investigate and the pupils will that way get the feeling that this is a very meaningful investigation and they and they will have lots of opportunities to communicate their learning's about the ice- balloon. Some of the concepts involved are floating and sinking, temperature, solids, liquids and gases.

A very exciting experiment to do with the ice-balloon is to pour salt over the ice-balloon and then a few drops of red and green food colour.

(continued on page 18)

SWEDISH APPROACH TO CREATIVITY IN TEACHING (continued)

The bottles: How to do it?

Ask the pupils if they can turn a plastic bottle (50cl) into something that works as a thermos.
I usually let them have a week to solve the problem and I let them do it at home.
We then talk about how to investigate which one will work the best. Often we agree that filling them with hot water and measuring the temperature is a good way.

What will happen?

You will get lots of very different and clever solutions to this problem. I think that what grabs them is the fact "there actually is something here to investigate". It's a meaningful investigation unlike the traditional way where there is only one right answer and where it's all about filling in the blanks.

These are some examples:

One girl made one out of fabric that works so well that her family still uses it as their thermos.

There is no question that this is more creative than the traditional way of investigating this. The picture on the right at the beginning of this article is actually exact the same investigation. When you use the bottle activity you will not only get interesting discussions but you will also see that this is a very good example of how you can place the science teaching and learning in an everyday context.

One more important comment is also that the children are very proud of what they have come up with.

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SWEDISH APPROACH TO CREATIVITY IN TEACHING (continued)

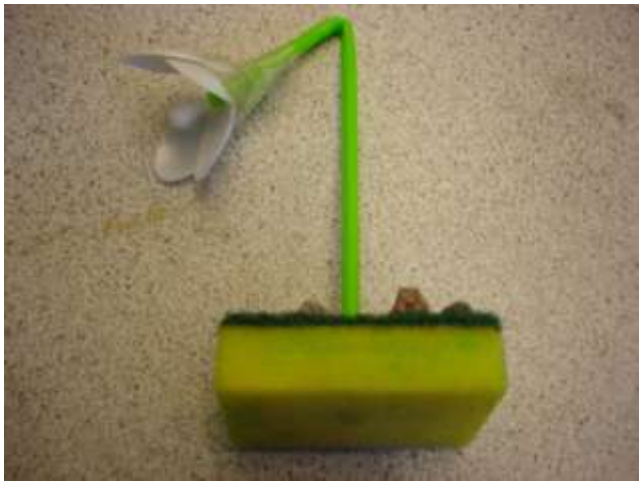
Build a flower: How to do it?

Ask the pupils to build a flower. You can let them do it at home and use whatever materials that they can get hold of. When the flowers are ready put them on display and give space for talk and communication.

What will happen?
This is an amazing activity. You will get a fantastic variety of smart constructions and the children are very proud of their flowers.

If you display the results on a table you can talk about different ideas of how you can sort the flowers. This usually leads to discussions about how scientists sort flowers.

When you look closely and observe the flowers in detail you will also get a very good chance to talk about the parts of the flower. Usually the children will have a lot of different ideas about this that are well worth listening to instead of first showing the class the parts of the flower a picture with the right answers. This, open activity, will give more of the children a chance to blossom.



I hope these examples has given you a picture of science teaching can more room for the pupils to be more pioneering, innovative and productive and that is what creativity is all about.

Hans Persson lectures worldwide on "Creativity and variety in the science classroom". He has published numerous books and if you want to know more he has a website in English http://www.hanper.se.

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Coteaching-A continuing professional development unit:
www.azteachscience.co.uk/resources/cpd/coteaching.

Science is Like a Puzzle (or Is It???): Connecting Analogies While Teaching with Videos

By Jeff Thomas

Scientists and teachers for centuries have used analogies to relate unfamiliar concepts to familiar ideas about what people already know. Here are a few that I recently heard:

a) the flow of electricity is like the flow of water through a hose;

b) the sun is like a flashlight; and

c) a cell is like a factory.

And, indeed, research into using analogies indicates that when done properly they can help students learn. However, when used ineffectively, they can lead to perpetuating and/or creating misconceptions about what is trying to be learned. To be used effectively, one must consider what students already know about an analogy, set aside enough teaching time to use the analogy, and have students reflect on the analogy. Taken one step farther, an additional method to teach effectively with an analogy requires teachers and students to purposefully describe similarities and dissimilarities between the familiar idea (called analog) and the unfamiliar concept being taught (called target).

As we all know, the amount of technology present in teaching has increased dramatically over the last decade. Videos from YouTube, TeacherTube, and other social network sites are part of an ample supply of videography available at the fingertips of teachers. When these videos center on sports, pop culture, or familiar aspects in a student's social world they become an even more powerful teaching tool. Teachers can purposefully plan to integrate videos and analogies to create a dynamic learning environment where students are motivated to compare and contrast a science concept and the video. Comparison may take on at least one of two directions. One, it may occur at a single moment if students have enough knowledge about the analog and target concepts. Two, it can occur over the duration of a unit on the target concept's topic. Specifically, students may continually add to a list about the similarities and dissimilarities between the analog and target concepts. Below is one example for utilizing a FedEx commercial when employees hide from their boss.

http://www.youtube.com/watch?v=Bqc0o1noUeY

Analogy: Camouflage is like office workers hiding among their work	
Similar	Dissimilar
1. Many organisms choose to use their camouflage when they feel endangered. 2. (Continue with your own ideas)	1. Many animals skin is born to camouflage them whereas the people in the video put on clothes. 2. (Continue with your own ideas)

Many schools block Web sites that provide video. Various software downloads can help users convert videos from these sites to files that can be saved as a stand alone file for showing in a classroom. For more information about using analogies in teaching science in the elementary classroom consider these two resources.

Sample writings about using analogies in the K-8 classroom

http://www.youtube.com/watch?v=69PMSLRBBQ0

http://www.youtube.com/watch?v=AX0rPllNAuM&feature=mfu_in_order&list=UL

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Hammerman, E. (2006). *Eight Essentials of Inquiry-Based Science, K-8.* Thousand Oaks, CA: Corwin Press, Inc.

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Breigh Rainey and Kristy Gilpin

The CESI Executive Board would like to congratulate Breigh Rainey, member, and Kristy Gilpin on winning the National Elementary Grand Prize Winner of Disney's Planet Challenge. Second Ms. Rainey and Ms. Gilpin's combination second/third grade class submitted their project entitled *Zachary Elementary Wetland Warriors—Fighting to Save Our Coast,* highlighting concern for Louisiana's eroding coastline and the threat to the coastal wetlands. The students and their teachers grew hundreds of grass plants in the school nursery they constructed at the school, subsequently planting the grass plants along the beach of Grand Isle. Currently, the students are raising 2,000 plants for next year's wetland project.

Students wrote and published books about the ecological dangers to the Louisiana Wetlands. Funds from the book sales will be used for wetland preservation. In addition, students produced *Coastal Roots* podcast, which was broadcast by local radio stations, highlighting the students' conservation efforts.

Information on *Zachary Elementary Wetland Warriors—Fighting to Save Our Coast* is found on:

http://dpcproject.com/winners2010/ElementarySchool.aspx

To learn more about the program and information on the 2012 contest, visit: http://corporate.disney.go.com/news/corporate/2011/2011_04_01_planet_challenge_winners.html.

Walter Smith and the *Moon Project*

Join Dr. Walter Smith and the MOON Project. Students and teachers in grades 4-8 are invited to join the MOON Project in global science inquiry. Contact Dr. Smith via email to join the free project:

walter.smith@ttu.edu

Students around the globe investigate the moon from a local and global perspective. Click on the following links to download the Teacher Handbook or the Students' Handbook for more detailed information.

Photograph Courtesy NASA

Date: 10.12.2009

Title: ASTRONOMICAL OBJECTS/MOON

Description: ASTRONOMICAL OBJECTS/MOON

ID: ISS021-E-5820

Credit: NASA Johnson Space Center - Earth Sciences and Image Analysis (NASA-JSC-ES&IA)

But What Happens When You Can't Find a Mentor?

By Kathy Wilhite

Recently in NSTA's *Science and Children*, July '10 there was an inspirational article titled *Everybody Needs a Betsy* by Deborah L. Hanuscin. She shares how fortunate she was during her early career in education to find a mentor just down the hall. She wasn't even looking for someone to assist her in learning more about teaching science - it just happened. But, what do the rest of us do? How do we find that person we can talk with, plan with and even "vent" with, that person many of us long for that can speak our language. What happens when we don't find that mentor? What do we do to construct our own professional development? What about those of us who have not yet found our Betsys? How can we become the leaders of the 21st Century for elementary science education? Here is how I navigated this situation upon returning to science education after almost a decade away from it.

In 2008, I interviewed for a tenure track position in a mid-western university and accepted the position with an understanding that a seasoned faculty member would mentor me through the first year. When I arrived for the position I found out that the 'seasoned faculty' member had resigned and accepted a position at another university. I was thinking about how I did NOT want to be in a lead position, I wanted to be a follower for a change. I wanted a friend/colleague…some one to talk to…someone to be in the same boat as I was in. Someone I could learn from and hopefully they could learn from me.

I had really never thought about wanting a mentor, but yes, in that situation, it is what I was looking for. I was afraid I was behind times in what was going on in science education because it had been so long since I had studied it. I thought this because I knew how much had changed from the 70's when I first entered science education to the 90's when I was working on my Ph.D. During those classes "we" had always talked about 'teaching science in the 21st century'…only to my surprise nothing much had happened during the beginning of the 21st century in science education even though I knew something wonderful was supposed to have happened. It seems that NCLB had sidelined science education. And the textbook driven science curriculum of the past had changed to fun filled activities that did not connect to any textbook or curriculum. That had not gone well either. So, we are at it again, working to connect the "content of the science concepts to the activities students are doing in the classroom." However, I have decided that's not all, the confidence level of those required to teach science is also an issue. Plus, knowing how to actually use the science kits available to many elementary and middle school teachers to help them begin to connect the content with the activities.

I digress, mentoring. Sometimes you just need someone else to encourage you and help you remember that you too can do it, whatever "it" might be. The following are some things I did and I would suggest to others.

- Get involved in area science events, (anything from the local children's museum or science center, the extension service, or the resources available to you in your school such as a teacher who is known as the science person because of their passion for science). During that time of getting involved you are also meeting and making connections with those with whom you can talk to, plan with and even "vent" to.
- Participate. One of my moves was to question locals about organizations I could become involved in. For me, that happened to be the Wisconsin Society of Science Teachers (the name of our state affiliate of NSTA). The annual conference happened to be in my city the coming year and I became a part of the planning committee to host it. Folks usually don't say no to help.
- Join (or rejoin) professional science organizations. I rejoined the National Science Teachers Association. I had dropped it earlier because of cost not loss of interest.
- Attend science organization conferences and meetings. I discovered that there was a regional meeting of the North Central Association of Science Teacher Educators close to where I live. So I attended the conference the first year, presented a poster session at the second and then shared a round-table session at the third. Additionally, at the third conference I was elected to the position of secretary.
- Keep your eyes open. About the same time I attended the area NSTA conference near where I live. While I was there I noticed on the schedule

(continued on page 23)

But What Happens When You Can't Find a Mentor? (continued)

that there was a session about an organization called the Council for Elementary Science International. At that gathering I found out I could come back for a lunch meeting. I went and I joined. Yet another opportunity to learn and teach.

What mentoring means to me

I have had many years of experience working as a mentor, teaching about being a mentor and mentee, however, I had never actually been a mentee. I think the most important aspect of mentoring is having both the mentor and the mentee understand what each has as expectations. And making sure those expectations are aligned with one another. It is also important to understand that both are members of the team, and that they both are in a position to learn and take something away from the relationship.

Needs expectations for mentor and mentee

The following list delineates a core list of mentor and mentee expectations.

- Approachability—be welcoming and accessible to each other.
- Time---schedule time you when can get together/ connect—weekly, monthly, whatever works for you, but schedule it.
- Respectfulness---be courteous, show respect to each other in regard to both ideas and space.
- Knowledgeable---do your homework; be well-informed; discerning; and insightful.
- Sincerity—be genuine; honest; and true about your own feelings.
- Enthusiasm---show excitement for or interest in people and things
- Trustworthiness--- be dependable; truthful; and responsible.
- Integrity---be consistent in an honorable way in regard to any and all actions, values, methods, measures, principles, expectations; and outcomes; be ethical.
- Positive Outlook---be forward looking; affirm in an encouraging way.
- Experienced—skillful; practiced; learned in content and process.
- Tactful---be considerate; discreet; and helpful.
- Flexibility---be adaptable as situations arise.
- Practice Confidentiality---a shared openness between mentor and mentee without fear of retribution.
- Good listener---pays attention; making a conscious effort to hear what the other is saying.
- Challenges me---stimulates the intellect; makes me think.
- Introduces you to others---gives you the opportunity to meet and get to know others (this is usually the mentor to the mentee)
- Willingness to learn---both parties need to be open to learning new things.
- Accepting feedback---this is usually for the mentee accepting a critical critique of the overall picture.
- Stretching beyond comfort level---again, this is for the mentee, sometimes being "pushed" beyond original comfort level.
- Discover a different perspective---both parties should be open to new ideas and dissimilar points-of-view.
- Carry through---doing what you have agreed to do and complete them.
- Supportive----this could even be finding the support/encouragement to "be oneself"

By the way…after a couple of years, I did find my mentor. She is not in science education, but she has been willing to learn more about my field and she has been there for me to talk to, listen to, and vent to.

As it turned out, I requested my mentor; she had to decide how much time she would have to work with me as she is in another department. And I had some criteria as well, it was essential to me that she had a similar background to that of working her way up through the ranks, having young children during her tenure experience, and that she was successful.

She is pushing me now that she has time in the semester (most of the time I have tried to take a back seat to her other commitments). I don't think I should be the one to push. I guess it is still my insecurity that says I'm not important enough for her to spend time on/with me. It is me not her. Right now we are using technology such as: Google docs and Eagleapps to communicate in addition to face-to-face interaction. Like I said, she is now encouraging me with specific expectations of what I should be working on and when I should have it completed. It is working well for both of us and is keeping both of us up-to-date.

By the way, my mentor's name is…Betsy!

TEACHING SCIENCE AND MATH THROUGH CHILDREN'S LITERATURE

By Marilyn Cook

Here is an **exciting** web site for books that teach science and math through children's literature. The books are also in Spanish. There are many resources for each book and be sure to check out the e-books.

http://www.sylvandellpublishing.com/index.php

Here is a review of *Henry the Impatient Heron*, one of the titles:

Hurry up! Hurry up! Come on and hurry up! Does this ever sound like an adult talking to children you know? Let's be patient! Does that sound like you? What happens if you aren't patient? Children can find out in an example while listening to or reading Henry the Impatient Heron. Henry the Heron is always hopping about and even though he tries his best to stand still when asked, he just can't stand still. This becomes a problem when he has to find food for himself. At the pond he is so excited about seeing all the insects and animals that he looses track of time and also his family. He knows he would have to feed himself but how could he do it? Henry is hungry and tries his best to get food, however he just can't seem to catch anything to eat. He runs into, literally, a great blue heron that helps him to learn to catch something to eat. This book is a delightful story with whole page captivating illustrations of all the animals that Henry meets along the way. The author has included great blue heron facts, information about wetlands, a heron life cycle matching activity and the web site to find teaching activities that integrate other subjects. Whether living on the coast or inland, meeting Henry helps students learn about the calm fresh water or sea coast habitat as well as how a heron hunts for food. Henry also can provide a model of "learning to be patient" as well as learning about all the surrounding wonders. This book could be used to compare and contrast other habitats where the students live. Also used with the set of bird books by Sylvan Dell students could compare and contrast other birds to Henry.

http://www.sylvandellpublishing.com/BookReviews/Heron_Review.htm

Other Web Resources for Science and Literacy

http://www.vims.edu/bridge/ - marine education resources web site with reviewed sites containing lesson plans for each grade level

Marine Literature
http://www2.vims.edu/bridge/search/bridge1output_menu.cfm?page_no=1

Exploring the Ocean Through Literature
http://sln.fi.edu/fellows/fellow8/dec98/main.html and

Ocean writing activities http://sln.fi.edu/fellows/fellow8/dec98/writ.html

Marine Education Books for children from Ocean Planet at the Smithsonian Institution

http://seawifs.gsfc.nasa.gov/OCEAN_PLANET/HTML/education_book_list.html

(Participants at the CESI Luncheon, NSTA National Convention, San Francisco, 2011.)

50 YEARS OF CHANGE

By Judy McKee

Struggling as a Beginner

"Those guys are really small!" exclaimed one of the boys as he peered into the large jar of pond water. "That's a cyclops!" I told him, handing over a magnifier. "If you look closely you can see that she carries her eggs attached to her legs." "Yow!" was the response. The water was alive with other moving things, so I transferred a portion to a smaller container and gave another boy an eyedropper to capture one of the microorganisms for examination under a microscope. When the scope was focused we could see the daphnia clearly, but I didn't immediately tell the children what it was. For that we used a pond book to match the picture with what we saw in the scope. It was the early 1960s, and as a beginning teacher I was working with three children assigned to my second grade. They were there before school so I could help them with their reading.

Yes, I said reading because somehow the boys already perceived reading to be a chore offering little pleasure. I was determined to change that. We embarked on some extra time together studying pond water brought into the school from a nearby park. A pile of books was used to arm the boys with facts and information qualifying them as class "experts" for a mini-study to be done with the whole class.

During a structured reading group held every morning, we covered the basal reader and many of the accompanying lessons from the teacher's manual required by the school district. I tried to make those lessons as productive as possible. However as the year progressed it was obvious that students I had concerns about were much more enthusiastic about our afternoon science lessons. I could see them using books to learn facts and master information. Eager faces and enthusiastic comments convinced me that I should capitalize on this. Slowly, their enthusiasm for reading and writing improved as I provided books of real interest to them and incorporated teachings from our morning guided reading group. I ushered them into the world of pond animals, bugs, spiders, and earthworms. We observed and examined these creatures. Then we read and wrote about what we had learned.

Enter the District Reading Consultant

Although the district science consultant encouraged my ideas and applauded the results, word had gotten out to others. Soon the district reading consultant came into my room to "help" me as a new teacher with struggling readers asking what I was doing to promote their success. I explained that I often spent time before school with these children and proudly told her that at these times and during afternoon science lessons the boys "turned on". I added that they seemed to be much more interested in reading about science topics than they were the required reading text. The consultant's eyes grew wide, making her disapproval clear. She promised to be back later with a schedule so I could use more classroom time to "put reading instruction first". Two days later she presented me with a new afternoon timetable and a few books from a new basal series she wanted me to use in the afternoon with the boys in addition to my morning structured reading lessons. She was adamant that I scratch my science extras: "After all, your most important job is to teach these boys how to read!"

I refrained from telling her I thought I was doing just that, but instead meekly took the plan. For a while afterwards I attempted an afternoon reading group using the second set of books, but it was drudgery for all of us. Soon I quietly revived my former activities. I have never been sorry. By motivating with a subject of genuine interest to struggling readers, by gearing lessons to student needs for feeling important and "in the know", and by reinforcing strategies taught during more formal reading instruction, I was sure I was onto something. My other students profited from my approach as well. The enthusiasm shown for our science studies and for reading and writing about what we were learning was reward enough.

Finally, Vindication

A few years later when my class was used as an experimental group in my school district to see if students exposed to experiential science integrated with literacy instruction would fare better than other classes on achievement tests, I was pleased to learn my hunches were right. It pleased me to know my students did perform better on the tests, including the reading tests. I was also told that they did better on questions involving reasoning.

Back then teachers commonly taught in the manner they had been taught, which was the same way it had

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50 YEARS OF CHANGE (continued)

been done for decades. Workbook page after workbook page was completed. Textbook followed textbook and basal readers alone were used to teach reading. Traditional methods along with a healthy dose of intuition were the mainstays of classroom practice. It was not yet known that reading and writing were natural compliments to rich science experiences. Information involving the "art and science" of teaching had yet to filter down from researchers. We couldn't have realized the magnitude of what was to come and how the changes could help teachers expand their knowledge base, design classrooms, develop lessons, and refine techniques to enable their elementary classrooms to come alive with possibility, excitement and knowledge.

Judy McKee is on the CESI Board of Directors and also writes the column "What's Next" for NSTA Reports.

JOIN US FOR THE ELEMENTARY EXTRAVAGANZA

Friday, March 30, 2012
8:00-9:30
Indianapolis Convention Center

This Extravaganza is not to be missed! Coffee, rolls, balloons, and door prizes are sure to bring attention to the event. It will bring together several of the leading organizations in providing resources and opportunities to elementary teachers. Each will contribute to the event and share their ideas based on their expertise. They will include Share-a-Thons, Make and Takes, and information concerning services and initiatives. Presenters will be clustered in areas of the ballroom by organization and signage will identify the group to which they belong. Attendees will be invited to visit the table of each presenter to learn and take away ideas.

Make and Take: each presenter will provide a lesson that is instruction ready. It will include the strategy as well as indicating content. Presenters should make the lesson as complete as possible including possible handouts for students and assessment strategies. Some presenters find it helpful to create their lesson using a 5E strategy to assure it is complete. There should be a connection to the National Science Education Standards (http://www.nap.edu/openbook.php?record_id=4962) and the new Frameworks (http://www.nap.edu/catalog.php?record_id=13165). The attendees appreciate learning through doing and it would be helpful to have either a demonstration or hands-on activity in which the participants can become engaged. This is what makes it a true "Make and Take." Also, a handout should be designed and provided. In lieu of a handout that participants take away with them in hand you may want to provide a link to a URL where your handout may be retrieved or you may take their email information and email them a packet.

Share-a-Thon: This is similar to a Make and Take without the hands-on component. The presenter shares teaching strategies with the participants and also provides examples of student work or possible products.

Support services: Each organization will be provided with a table (may include more than one table, depending on organization need) that will provide an opportunity to share information with participants. This information might include

- membership in organization
- award and student competition opportunities
- assistance in completing awards applications
- opportunities for involvement in organizations and initiatives
- how to gather additional teaching information
- contributing to publications

We anticipate about 200 attendees so get your lesson ready to share—complete the Share-A-Thon form included.

WHY SHOULD I PRESENT AT THE CESI SHARE-A-THON?

Everyone of you has something to share. You found something and made it your own, or just found something and made it work. Now is your opportunity to share some of your best ideas and experiences with others. Maybe it is film canisters used to match sounds, kaleidoscopes from a paper towel roll, an ice balloon, or a note card you can step through. The ideas that you have in your treasure trove are endless. Come and share with others that imbue the same enthusiasm for teaching science. If you are attending any of the area conferences, please join us.

Dates Fall Conferences:

Hartford, October 27-29, 2011

Contact Janelle Day,
mailto:dayj@easternct.net

New Orleans, November 10-12

Contact Breigh Rainey,
mailto:breigh.rainey@zacheryschools.org

Seattle, December 8-10

Contact Chris Stark,
chris_stark@peoplepc.com or

CELEBRATE SCIENCE AT THE 2ND INTERNATIONAL USA SCIENCE & ENGINEERING FESTIVAL

The First Science and Engineering Festival was held on the Mall in Washington, DC last April. Jeanelle and Stanley Day spent the day in the NSTA tent on behalf of the Council for Elementary Science International. Over three hundred children and adults participated in CESI activities on Bernouilli's Principle and the principles of flight.

Building on the success of the inaugural Festival in 2010, the 2nd USA Science & Engineering Festival will inspire the next generation of scientists and engineers with school programs and nationwide contests throughout the 2011/2012 school year and a finale Expo in Washington DC on April 27-29, 2012. The Expo is the nation's largest celebration of all things science & engineering and features over 1500 hands-on activities and over 75 performances.

Find out more by visiting their website:

http://www.usasciencefestival.org/

Above: Participants at the CESI Luncheon, NSTA National, San Francisco, CA, 2011. We'll be looking for you in our sessions at the fall area NSTA conferences and the 2nd annual International USA Science and Engineering Festival!

Council for Elementary Science International

Call For Presenters

SHARE-A-THON EXTRAVAGANZA

at the NSTA CONFERENCES

Council for Elementary Science International (CESI) will again sponsor the very popular **Share-A-Thon Extravaganza** at the 2011/2012 NSTA Conferences.

Check which Share-A-Thon at which you wish to present:

_____ Hartford, CT **_____Seattle, WA**

_____ New Orleans, LA

You will be notified of acceptance through email by Barbara Tharp, CESI President

Room, NSTA Safety form, time, and date information regarding the workshop will accompany acceptance notification.

It is your responsibility to get the safety form completed and submitted **to NSTA** in order to have your name included in the official program.

Name	School/Institution
Home Address	School Street Address
City	School Phone #
State/Province	City
Zip	State/Province
	Zip
Email Address	

Attach an e-copy of the handout you plan to use at the session. This will allow us to share these electronically. Please reference non-original ideas.

Activity Title:
Objective:
National Science Standard:
Materials:
Content Connections
Background Information

Prior Preparation and Instruction of Activity and 5E Planning Model

Engage:
Explore:
Explain:
Elaborate:
Evaluate:

E-mail form to:
Barbara Z. Tharp, President
btharp@bcm.edu

Please Note:
All presenters will receive and be required to sign an NSTA Safety Information Sheet. If the Safety sheet is returned **before** the Program publication deadline, then the presenter's name will be included in the convention program

SAFETY AGREEMENT FOR CESI ELEMENTARY EXTRAVAGANZA NSTA NATIONAL 2012

PLEASE NOTE

- Presenters must read and agree to adhere to NSTA's safety practices and regulations.
- NSTA requires signed safety agreements from all of the session's presenters. If a presenter is giving more than one presentation, we'll need a copy of his or her signature on file for each session. We can only use multiple copies of the same signed agreement if the safety considerations are exactly the same for each session.
- IF WE DO NOT HAVE A COPY OF YOUR SIGNED SAFETY AGREEMENT ON FILE, YOU WILL NOT BE LISTED AS A PRESENTER IN THE CONFERENCE'S FINAL PROGRAM.
- The Final Program will list your name, school/place of work, city, and state. Please fill in the information below, and this will help ensure that we have your correct affiliation on file.

Name_____

Dept. _____

School/Inst._____

Work Address _____

City, State, Zip _____

Phone: work ( )_____ home ( )_____

Fax: ( )_____ e-mail: _____

SESSION NUMBER # ___2049 Workshop_____

SESSION NAME __Elementary Extravaganza_____

CONFERENCE CITY _Indianapolis, Friday, March 30, 8:00-9:30 AM, 500 Ballroom, Conv. Center

PLEASE SUBMIT ONE FORM PER SESSION, EVEN IF THEY APPEAR SIMILAR.

○ Please include my e-mail address in the final program. ○ Do NOT include my e-mail address in the final program.

☐ I understand that full conference registration payment is required to present and or preside at an NSTA conference.

Identify any potential safety hazards associated with your presentation.

○ N/A ○ _____

_____

What precautions will be taken during the presentation to deal with these hazards and to inform the audience?

○ N/A ○ _____

_____

What safety equipment will be required? (Please specify what equipment you will be providing and/or what equipment you need NSTA to provide.)

○ N/A ○ _____

SAFETY AGREEMENT FOR CESI ELEMENTARY EXTRAVAGANZA NSTA NATIONAL 2012

NSTA Minimum Safety Practices and Regulations

for Presenters, Workshop Leaders, Exhibitors, and Advertisers

Preamble

The National Science Teachers Association, an organization of science education professionals dedicated to the stimulation, improvement, and coordination of science teaching and learning, supports prudent safety practices and regulations at all levels. Presenters, workshop leaders, contestants, authors at NSTA-sponsored activities, exhibitors, and advertisers serve as role models for other science educators. As role models, these individuals must develop, encourage, and display prudent safety practices at all times. A model safety role promotes positive safety in actions, words, behavior, and deeds. Science safety is an integral part of science education and serves as a preparation for life. Accordingly, NSTA encourages teachers to offer meaningful and safer science experiences in both the science laboratory/classroom and field. NSTA requires that all presentations, workshops, related science-education activities, exhibits, and advertisements be conducted in accordance with legal health and safety standards/regulations and professional prudent safety practices. The intent of the following safety guidelines is to promote safer science practices at all NSTA-sponsored activities and exhibits, and in all advertising media as well.

All Presenters, Workshop Leaders, Exhibitors, and Advertisers Must Follow the NSTA Minimum Safety Practices and Regulations

The Following May Not Be Part of Any Presentation or Workshop at an NSTA Conference Under Any Circumstances:

1. Parts of the body are not to be placed in danger, such as placing dry ice in the mouth, dipping hands or fingers into liquid nitrogen or molten lead, or exposing the hands and face to microorganisms. Demonstrations such as the following shall not be conducted: walking on broken glass or hot coals of fire with bare feet, passing an electric current through the body, or lying on a bed of nails and having a concrete block broken over the chest.
2. Live vertebrate animals may not be used in demonstrations or for experimental purposes. Such animals may be used only for observational purposes provided the animals have been lawfully acquired, are housed in proper containers, and are handled in a humane way following the NSTA's "Guidelines for Responsible Use of Animals in the Classroom" (NSTA Position Statement). Any certification papers or vaccination documents shall be made available upon request.
3. Animals are to be used for educational purposes and not for the exploitation of the animal for advertisement, commercial purposes, or sensationalism. This includes use of animals in the Exhibit Hall.
4. Live ammunition, firearms, or acutely dangerous explosives such as benzoyl peroxide, diethyl ether, perchloric acid, picric acid, and sodium azide may not be used. Commercially available fireworks and blasting caps shall never be employed.
5. Plants with poisonous oils (e.g., poison ivy) or saps (e.g., oleander) or other plants known to be generally toxic to humans are not to be used. (Resource: *Human Poisoning from Native and Cultivated Plants,* by James W. Hardin and Jay M. Arena. The publisher is Duke University Press, Durham, NC 27708.)
6. Experiments or demonstrations with human or animal blood/body fluids (other potentially infectious materials [OPMIs]) may not be conducted.
7. Radioactive powders, liquids, or solutions are not to be used except in a laboratory facility designated for the type of radioactive

SAFETY AGREEMENT FOR CESI ELEMENTARY EXTRAVAGANZA NSTA NATIONAL 2012

5. In planning demonstrations and/or workshops, keep quantities of hazardous materials to a minimum. Use only those quantities that can be adequately handled by the available ventilation system. Do not carry out demonstrations that will result in the release of harmful quantities of noxious gases into the local air supply in the demonstration or other rooms. The following gases shall not be produced without using a fume hood: nitrogen dioxide, sulfur dioxide, and hydrogen sulfide. Volatile toxic substances such as benzene, carbon tetrachloride, and formaldehyde shall not be used. These substances are banned by most chemical lists.
6. Make sure your glassware and equipment are not broken or damaged. The use of chipped or cracked glassware is prohibited. If glassware is to be heated, Pyrex™ or its equivalent shall be used. Properly dispose of broken glassware to prevent exposure to sharps.
7. Thoroughly check motor-driven discs that will be revolved at moderate or high speeds. Make sure the disc is sturdy, that it contains no parts that may come free, and that the safety nut is securely fastened. Arrange to use a safety shield and/or eye protection for audience members and interpreters for any demonstration(s) in which projectiles are launched or when there is the slightest possibility of an unsafe explosion. Do not allow direct viewing of the sun or of infrared or ultraviolet sources.
8. Make sure any lasers to be used in demonstrations are helium-neon lasers with a maximum output power rating not exceeding 1.0 milliwatts. At all times, avoid direct propagation of the laser beam from the laser into the eye of an observer or from a reflected surface into the eye.
9. Secure pressurized gas cylinders by strapping or chaining them in place or by using proper supports, i.e., lecture bottles.
10. Obtain in advance the necessary state and/or local permits needed for the firing of model rockets. Activities involving the firing of rockets must be well planned and follow Federal Aviation Agency (FAA) regulations, state and local rules and regulations, and the National Association of Rocketry's (NAR) Solid Propellant Model Rocketry Safety Code.
11. Arrange for appropriate waste containers and for the disposal of materials hazardous to the environment.
12. Plan to dress safely for your presentation or workshop. If you have any questions concerning safety and your presentation, contact Kenneth Roy, NSTA's Science Safety Compliance Consultant (860-652-7200, ext. 2002) or e-mail *royk@glastonburyus.org.*

During the Presentation:

1. Comply with all local fire and safety rules and regulations. Follow the "NSTA Minimum Safety Practices and Regulations."'
2. Wear appropriate personal protective equipment (i.e., eye protection, an apron, ear protection, and similar protective gear) for all chemical demonstrations or when appropriate for other demonstrations. Safety glasses with side shields (ANSI Z87.1 compliant) are to be used when dealing with solids (e.g., projectiles, glassware, meter sticks). Indirectly vented chemical splash goggles (ANSI Z87.1 compliant) are to be used when dealing with hazardous liquids (e.g., acids, bases, alcohols). Splash goggles (ANSI Z87.1 compliant) can also be used in lieu of safety glasses with solids. For exhibit hall activities, know the location of portable gravity-feed eyewash stations in case of a hazardous chemical splash incident. For all other locations where hazardous chemicals are used, the presenter must provide either a gravity-fed eyewash unit or other type of effective emergency eyewash device. Provide personal protective equipment such as eye protection, aprons, and safety equipment for participants who will be handling chemicals or hazardous substances, or working with flames. If flames or flammable materials are used, fire suppression equipment must be available and have an up-to-date inspection tag (fire extinguisher). Appropriate personal protective equipment must also be provided for audience members who are considered in the "danger zone" that would result from a splash or other means of contact.
3. Do not select "volunteers" from the audience. Assistants used in demonstrations shall be recruited and given the proper instructions beforehand.

SAFETY AGREEMENT FOR CESI ELEMENTARY EXTRAVAGANZA NSTA NATIONAL 2012

During the Presentation:

1. Comply with all local fire and safety rules and regulations. Follow the "NSTA Minimum Safety Practices and Regulations."'
2. Wear appropriate personal protective equipment (i.e., eye protection, an apron, ear protection, and similar protective gear) for all chemical demonstrations or when appropriate for other demonstrations. Safety glasses with side shields (ANSI Z87.1 compliant) are to be used when dealing with solids (e.g., projectiles, glassware, meter sticks). Indirectly vented chemical splash goggles (ANSI Z87.1 compliant) are to be used when dealing with hazardous liquids (e.g., acids, bases, alcohols). Splash goggles (ANSI Z87.1 compliant) can also be used in lieu of safety glasses with solids. For exhibit hall activities, know the location of portable gravity-feed eyewash stations in case of a hazardous chemical splash incident. For all other locations where hazardous chemicals are used, the presenter must provide either a gravity-fed eyewash unit or other type of effective emergency eyewash device. Provide personal protective equipment such as eye protection, aprons, and safety equipment for participants who will be handling chemicals or hazardous substances, or working with flames. If flames or flammable materials are used, fire suppression equipment must be available and have an up-to-date inspection tag (fire extinguisher). Appropriate personal protective equipment must also be provided for audience members who are considered in the "danger zone" that would result from a splash or other means of contact.
3. Do not select "volunteers" from the audience. Assistants used in demonstrations shall be recruited and given the proper instructions beforehand.
4. Warn participants and the audience to cover their ears whenever a loud controlled explosion is anticipated.
5. Use a safety shield for all demonstrations that involve the launching of projectiles or whenever there is the slightest possibility that a container, its fragments, or its contents could be propelled with sufficient force to cause injury. Shield moving belts attached to motors. Use caution when motor-driven discs are revolved at moderate or high speeds. Shield participants or move them to a safe distance from the plane of the rotating disc.
6. Follow proper procedures for working with pressurized gases and when heating all forms of matter.
7. Use appropriate gloves and shields when working with hazardous chemicals and biohazards, cryogenic materials, hot materials, radioactive substances, vacuums, or electromagnetic radiation, and when presenting animals for observation.
8. Do not taste or encourage participants to taste any non-food substance. A food substance subjected to possible contamination or unsafe conditions shall never be tasted.
9. Alert the audience clearly at the beginning of the program of the presence or production of allergenic materials such as chemical emissions, strobe lights, microwaves, "theater" smoke, lycopodium powder, or live animals.
10. Review emergency evacuation information with attendees at the beginning of the presentation/demonstration/activity. Maintain clear egress during the demonstration or workshop.
11. Emphasize and demonstrate appropriate safety precautions throughout the presentation or workshop.
12. Distribute a handout that will give participants detailed instructions about the procedure, safety precautions, hazards, and disposal for each demonstration and workshop.

—Adopted by the NSTA Board of Directors August 1994 and revised July 2000. Modified September 2004 by the NSTA Safety Advisory Board Chair. Revised
February 2007, November 2007 and March 2009.

Submit to: 703-522-5413 or complete form online
http://www.nsta.org/pdfs/GenericConfirmationForm.pdf

SUPPORT HOUSE RESOLUTION 378 - SUPPORT SCIENCE EDUCATION
YOU CAN MAKE A DIFFERENCE!

As the August Congressional recess comes to an end and the school year is beginning across the country, we are asking you to encourage members of the House of Representatives to co-sponsor House Resolution 378. This Resolution, which the STEM Education Coalition helped draft, emphasizes the importance of STEM education to our country's future and urges the House to give "strong consideration" to the question of how best to integrate science, along with math and reading, into the K-12 school accountability system as Congress reauthorizes the Elementary and Secondary Education Act, otherwise known as No Child Left Behind.

By going to the Coalition's website you will be able to send a personalized letter to your member of the House of Representatives urging them to co-sponsor H.Res. 378. Once you enter this site, you will be instructed to enter your contact information and view a sample letter. All information sent over this website is confidential.

Every letter you send will help strengthen and improve the way Congress treats STEM education as it reauthorizes ESEA/NCLB. There are many new members of the House that need to hear from their constituents on this important matter.

You are encouraged to forward this link to all of your networks and distribute as widely as possible. Below is further background information on House Resolution 378 and background on the issue of school accountability.

On July 28, 2011 Representatives Judy Biggert (R-IL) and Rush Holt (D-NJ) introduced House Resolution 378. It is a **bipartisan** resolution that calls for the House of Representatives to give strong consideration to the role of science education in the educational accountability system as it works to reauthorize the Elementary and Secondary Education Act (No Child Left Behind).

Read H. Res 378 http://thomas.loc.gov/cgi-bin/query/z?c112:H.RES.378:

Background: While science is tested, only English Language arts (ELA) and mathematics assessments are counted in the current accountability system under NCLB. As a result, time spent on science has been greatly reduced in schools nationwide. A Center for Education Policy report, Instructional Time in Elementary Schools: A Closer Look at Changes for Specific Subjects, February 2008, found that a majority of the nation's school districts increased time for English Language arts or math and reduced time by at least 75 minutes per week for science. Science education is critical to our nation's future.

In July 2011 a U.S. Department of Commerce report found that:

The STEM workforce has an outsized impact on a nation's competitiveness, economic growth, and overall standard of living . . . STEM jobs are the jobs of the future. They are essential for developing our technological innovation and global competitiveness . . . Regardless of educational attainment, entering a STEM profession is associated with higher earnings and reduced joblessness. For college graduates, there is a payoff in choosing to pursue a STEM degree, and for America's workers, an even greater payoff in choosing a STEM career. (STEM: Good Jobs Now and for the Future, U.S. Department of Commerce, July 2011)

What You Can Do:

For years, our Coalition has advocated including student achievement in science alongside math and ELA as a required element of the revised accountability system under ESEA.

It is important to get a large number of members of Congress to cosponsor House Resolution 378. The number of Representatives listed as co-sponsors will determine the level of support for this issue.

Ask your representative in the House to support House Res 378:
http://www.congressweb.com/cweb2/index.cfm/siteid/stemedcoalition/action/TakeAction.Contact/lettergroupid/6

Call for Papers—*Science and Children*

March 2012: Earth Day
Deadline October 1, 2011
Everything relevant to the environment—from animals on the endangered species list to school recycling efforts—can be a part of the Earth Day celebrations and awareness. What materials have you found helpful in engaging your students in Earth Day? What types of projects have they undertaken? How have you and your students engaged others? Do you have an Environmental Club, involve students in stewardship activities, or empower your students as advocates for the Earth in other ways?

April/May 2012: Learning Doesn't Take a Vacation
Deadline November 1, 2011
When we have students who are eager to learn more about science and don't want to stop at the end of the school year, we have the perfect opportunity for offering suggestions for summer enrichment. What types of programs do you recommend students become involved in during summer vacation? Do you provide students with take home resources during the summer? Have you provided school-site based summer programs for students? What resources are available to you, your students, and their parents?

Summer 2012: The First Two Weeks of School
Deadline December 1, 2011
Does it seem like the first two weeks of school are the toughest? It's the time we are getting to know our students, develop classroom routines, and begin to build the foundation for a year of learning. What types of science activities do you provide during the first couple of weeks of school to help you accomplish all of that? How do your initial experiences with students provide a structure to scaffold toward further investigations in which they will participate during the school year? How do you organize your classroom to maximize the usefulness of all of your resources and engage students from the very fist day of school?

Not ready to pen a feature article?

Consider writing a column. These shorter, focused pieces are the perfect way to share your experiences with the wider elementary science community.

Science Shorts

This column shares your take on classic classroom activities and how they emphasize science-process skills. After introducing the activity and placing it into classroom context, provide the activity how-to and materials list. Include a guiding question for the activity, the targeted grade level, and the process skills the activity addresses. Rubrics, study guides, worksheets, and other materials should be provided as they will be shared via NSTA Connections, our online resource site. Length: 1500 words

Methods and Strategies

This column provides ideas and techniques to enhance your science teaching. This is S&C's "think piece" and connects science teaching with research on teaching and learning. This is done by sharing an account of a method or strategy used in the classroom and explaining how its use is supported by research. While the presentation of the method or strategy is often content-based, the method or strategy should be applicable to other settings and other content. Length: 2000 words

Professional Development

This new column will focus on your professional development experiences. Share what has worked for you, what didn't, and provide information so that readers can find similar experiences to improve their practice. Thoughts to consider include, "How does this help the practitioner? What can the teacher take away from this manuscript that would help them either create their own opportunities or tap into this type of opportunity by finding their own resources?" Length: 2000 words

NOMINATION REQUIREMENTS FOR MURIEL GREEN AWARD

New Elementary Science Teachers or Pre-service Teaching Award

The Muriel Green Award recognizes outstanding new elementary science teachers/pre-service teachers. It assists them in becoming more active in the science education community. Awardees will receive a two-year membership in CESI, complimentary tickets to the CESI Annual Luncheon at the NSTA National Convention, a CESI Sourcebook, a CESI pin and recognition in national publications.

Eligibility and Procedures
Applicant must be an undergraduate senior in elementary education who intends to teach science; full-time or part-time graduate student enrolled in an academic program leading to a degree licensure, or certification in some area of science education; or an elementary teacher with an interest in science and who is in the first five years of service.
Applicants must be nominated by a current CESI member. The nominator must complete an evaluation form and write a letter of recommendation.

Nomination Procedures
The nomination questionnaire must be completed by the nominator. The nominator must write a paragraph or two describing why you have nominated the candidate and describing why he or she will be an outstanding elementary science teacher.

The candidate should write and sign a one-page essay. The essay should address three points: goals for teaching elementary science, types of methods you use in teaching\science, and why teaching science to elementary students is important.

Complete applications online at:

http://www.cesiscience.org/

NOTE: All awardees will write an article for the CESI Newsletter.

FREE STUDENT RESEARCH PROJECT ON THE INTERNATIONAL SPACE STATION!

You and your students can participate in an exciting investigation taking place in space and on Earth. The *Plants in Space* project will examine plant root growth in microgravity. You and your students can grow ground-based control plants in your classroom, download hourly photographs from the International Space Station, and design your own experiments using the data from space. The live experiments begin on September 19. Find out more and register for the free teacher guide on BioEd Online (http://www.bioedonline.org) and K8 Science (http://www.k8science.org).

Brought to you by the National Space Biomedical Research Foundation, BioServe Space Technologies, Center for Educational Outreach at Baylor College of Medicine, and NASA. Additional support from Houston Endowment Inc. and Howard Hughes Medical Institute.

WHAT IS CESI?

The Council for Elementary Science International (CESI) is an international professional organization for teachers (pre-K through 8th grade) who have the responsibility to teach science to children, elementary, and middle school science educators, and pre-service teachers who will become Pre-K – 8th grade teachers. **CESI Mission Statement:** ***The Council for Elementary Science International promotes excellence and equity in K-8 science education.*** The purposes of the Council for Elementary Science International, according to the CESI Constitution, are" … to stimulate, improve, and coordinate science teaching at preschool and elementary school levels and to engage in any and all activities in furtherance thereof; to promote the improvement of science progress, which begins in preschool and develops in continuous and integrated fashion through grade 12 and beyond."

CESI membership includes a professional journal, newsletters, and opportunities to learn and collaborate with colleagues at breakfasts, luncheons, make and take sessions, workshops, and presentations, and mini-conferences usually held at national and regional NSTA conventions. CESI is the elementary affiliate of the National Science Teachers Association.

Founded in 1920, CESI is one of the oldest science-oriented organizations in the nation. The purpose of CESI is to promote excellence in the teaching of science in preschool through middle school classrooms. CESI has approximately 800 members, two organizational affiliates, and two states, which share joint membership. Members of the organization include classroom teachers, resource teachers, specialists, principals, researchers, and college and university science instructors (methods and content area). A Board of Directors elected by the membership governs the organization. Current dues are $20/year. Corporate and institutional sponsors are invited.

For additional information, contact
CESI President,

Barbara Tharp
Assistant Director, Center for Educational Outreach
Baylor College of Medicine
btharp@bcm.edu

Join CESI online at:

http://www.cesiscience.org/index.htm

$20 One-year General (US and International)
$36 Two-years General (US and International)
$90 Five-years General (US and International)
$10 Retired
$18 Retired two-years
$10 Student

$18 Student two-years
$200 Lifetime
Above: CESI Luncheon participants NSTA National Convention, San Francisco, CA, March 2011

LINKS TO LESSON PLANS

\BioEdOnline
http://www.bioedonline.org/

K8 Science
K8science.org

Science-Class.net
http://science-class.net/

ALEX
http://alex.state.al.us/search.php?fa_submit=PLANS

TEACHERS: Experience professional development at the ends of the earth!!!

From our participants:

In the five weeks that I was up there [Greenland], I learned more about atmospheric chemistry than I have in my entire life until that point...I learned more in those five weeks than I did in all of my college length combined.

I was changed as a teacher but I was also changed as a person.

I had forgotten how much fun it was to learn myself… being out there really puts you out of your element and challenges you differently.

Apply now for the professional development experience of a lifetime, conducting research for 2-6 weeks with leading scientists in the Arctic or Antarctica!

- Participate in real, relevant, and cutting-edge science
- Share your experiences with your students and community
- All major expenses covered - including substitute teacher costs
- Grades K-12 and informal educators welcome to apply

Application Period: 1 August - 30 September 2011

Want to learn more?

Register for a free Informational Webinar at www.polartrec.com:

Thursday 11 August 2011

3:00 pm Alaska Daylight (4:00 pm PDT; 5:00 pm MDT; 6:00 pm CDT; 7:00 pm EDT)

info@polartrec.com • 907-474-1600 • www.polartrec.com

PolarTREC is funded through a grant by the National Science Foundation Office of Polar Programs and is administered by the Arctic Research Consortium of the United States (www.arcus.org) in Fairbanks, Alaska.

CC

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