CRCST
Cleveland Regional Council of Science Teachers

CRCST Quarterly Newsletter

Volume LXXIII No. 3 Winter 2016

Upcoming Events:

2017 Spring Symposium

INSIDE THIS EDITION

Holiday Greetings!

It is hard to believe that 2016 is almost at an end and December is finally upon us! It was hard to bring myself to scrape off the snow off my car after a few delightfully warm days in November. Now if only I can find my warm gloves!

Holiday and winter festivities are well underway and it can be very overwhelming. Teacher evaluations are in full swing in many districts and many educators are very busy bees! We can all agree that teachers have quite a challenge when it comes to keeping students' attention as the year comes to a close, when winter break is on the minds of every student, teacher and administrator! Sometimes it can be hard to find ways to engage students during this time and it is hard to resist the temptation to focus your students using more visual media then you traditionally would.

As many of you may be enjoying holiday lights inside or outside your home this holiday season, I would like to light up your world with two highly motivating, free pieces of technology that your observer or administrator will love to see being used in the classroom! Kahoot and Plickers are two under-used pieces of technology in today's learning centers.

Kahoot allows students to work individually or in teams to answer a variety of review or formative style multiple choice or true and false questions to compete for a high score. The correct answer and response time determines the score received. A computer or tablet is needed for each student or team of students. At the school I work at I have found that four or five students can easily use one computer to answer questions. Find out more at https://getkahoot.com/.

Plickers is great for a classroom that does not have regular access to computers or tablets. Only one internet-enabled device is needed to use Plickers as a fun assessment in your classroom. Codes are used and scanned by the Plickers application on a phone or tablet to receive the data students provide in answer to a multiple choice or true and false type question. Each student receives a card with their own code. These can be assigned for more than one classroom of students if you teach multiple classes and are easy to print out and distribute. The application is free and has a corresponding website. Find out more at https://www.plickers.com/.

I wanted to reach out and thank all of the attendees of the CRCST Fall Conference that was held at Holden Arboretum in the beginning of November. I was delighted to see many faces, new and old, and the sessions were very informative! Between the variety of sessions and exhibitors, I know my brain was full of ideas by the time I left that Saturday afternoon!

Recently some of our members were able to attend NSTA's Regional Conference in Columbus, Ohio at our very own CRCST meet and greet session. I'm sure many interesting ideas were shared and networking opportunities were abundant! Thank you to all who attended and we hope to see many of you become more involved in CRCST.

Hopefully you will get the rest you deserve this winter vacation to de-stress, unwind and find things that make yourself happy, as we know you spend much of your time helping students find the fun in education that is so difficult to do in the test-taking age that we find ourselves in. Keep your head up high, remember to move your elf on the shelf both at home and school and march like the little drummer boy into 2017! Here's to a new year of revitalized teaching, merry learning and a sky's the limit type attitude to complete the 2016-2017 school year.

Cheers!

The Cleveland Regional Council of Science Teachers

National Science Teachers Association National Conference Scholarship Opportunity for Northeast Ohio Teachers

Two applicants will be granted $800 each to support their registration, travel and room & board to the NSTA National Convention held in the spring of the year. $650 will be provided if you are selected from the applicants. The additional $150 will be provided after you fulfill the post-convention requirements. $800 may not cover all expenses but it will likely cover the majority of the cost. Applicants may, but are not required to, be from the same school or district. Awardees may count on CRCST members to provide help in all areas. Questions? Call Susan Clay at 440-570-1155.

Requirements for applicants:

- Must be a member of both CRCST <www.crcst.org> and NSTA <www.nsta.org> when the application is submitted.
- Must submit all parts of the application by mail (Susan Clay, 6484 State Rd. 12D, Parma, OH 44134) or email (suzieclay@aol.com) prior to the deadline of January 15, 2017 including:
    - An at least 250 word essay addressing your interest in attending the NSTA national convention.
    - An example of a science lesson that you have used with your students and a discussion of its value to the students, i.e., how did it improve their understanding of the subject of the lesson. A brief discussion of your philosophy of teaching science should be included as well.
    - A letter of recommendation from your principal.

- Following your conference experience you will be required to:
    - Submit an article discussing your experience for publication in the CRCST Quarterly Newsletter of at least 600 words.
    - Present a concurrent session (generally about 50 minutes) at the next CRCST Fall Conference to show how you incorporated information and/or skills gained at the convention into (an) exemplary lesson(s) that you have developed and used in your classroom. You may co-present with the other convention attendee.

Please include the data below with your application packet

Name: _____ Date: _____

Home or Cell Phone: (_____)_____ E-mail: _____

School Name and Address: _____

_____ ZIP _____

NSTA membership number: _____ CRCST membership expiration date: _____

Grade(s) Currently Teaching: _____ Years of Teaching: _____

Principal's Name: _____ School Phone: (_____)_____

THE NEOSEF AWARDS

On March 6 -9, between 500 - 600 students will join together at John Carroll University to demonstrate their knowledge of an area of science at the North East Ohio Science and Engineering Fair. CRCST has supported the program and the students by sponsoring 9 awards for the 7th and 8th graders every year. We give $100 Award for Biology, Chemistry, and Physics each along with $50 Award in Medicine/Health, Environmental Science, Behavioral Science, Earth Science, Computer/Math, and Engineering. Members of CRCST and other supporters serve as judges and every 7th and 8th grade project gets judged on the Tuesday afternoon. We pick the best project in each division and the students find out on the Thursday evening Award Ceremony.

Susan Clay serves as the CRCST Board Representative on the NEOSEF Board. She also is responsible in finding judges for the CRCST Awards. If you are interested in helping this year, contact her at suzieclay@aol.com or at 440-570-1155. Judging will be from 3:00 to 5:30 PM on Tuesday, March 7 and all judges are invited to a judges reception at 5:30 PM. If you have a later release time in the day, still consider helping with the judges.

GEMS SCHOLARSHIP to NSTA

The last few years, CRCST has offered $800 awards from our GEMS account to aid in a teacher's professional development. The CRCST Board decided at the February meeting to award one of the scholarship to Stephanie Nowak from the Mentor school district. She attended the NSTA National Conference March 31 to April 3 in Nashville, Tennessee. Again, Stephanie presented at the 2016 Fall Conference similar to what she did at the 2015 Fall Conference.
This scholarship is awarded to a CRCST/NSTA member to be applied to the expense of attending the NSTA National Conference or a Fall Area NSTA Conference. The 2017 National Conference will be in Los Angeles, California (March 30 - April 2) and the 2017 Fall Area Conferences are in Baltimore, MD (10/ 5-7), Milwaukee, MN (11/ 9-11), and New Orleans, LA (Nov. 30 - Dec. 2).

A copy of the application is in the newsletter or can be obtained from Susan Clay (440-570-1155 or suzieclay@aol.com). The applications are due January 15, 2017.

FELLOWSHIP OPENINGS AT NASA GLENN

Two new Biomimicry PhD Fellowship openings are available with NASA Glenn Research Center in Cleveland. The program is perfect for students interested in the field of biomimicry and its application to solve real-world problems in the aerospace industry. Fellows will interact with collaborating scientists and engineers at NASA and The University of Akron.

Learn more here

CRCST at the NSTA Columbus Area Conference

This year, National Science Teachers Association (NSTA) honored Ohio by having one of the Fall Area Conferences in Columbus, OH from December 1- 3. CRCST decided to host a social event during the Conference. On Friday, December 2, we hosted Cleveland Regional Council of Science Teachers Open House Reception.

There was food and cherry lemonade drink to replenish the many guests after a day of attending sessions. CRCST was honored by having our own NSTA Past President Bill Badders attending along with the current NSTA President-Elect David Crowther and Retiring President Carolyn Hayes.
During the event materials from Holden Arboretum and the GEM Scholarship were available for the guests.

Colorful Evolution

Many people have wondered how and why spiders independently evolved the ability to make blue colors using nanostructures. Thanks to our University of Akron Biomimicry PhD Fellow Bill Hsiung, we now know more.

Bill's published research was the most downloaded article on Advanced Optical Material's website last month.

Biomimicry Open Innovation Session

In October, 40 people representing seven Northeast Ohio-based organizations -- GOJO, Great Lakes Biomimicry, University Hospitals, The J.M. Smucker Company, Nottingham Spirk, Lubrizol and Avon Lake Regional Water -- gathered for the first-ever Biomimicry Open Innovation Session.

Leveraging the collective brain power of the regional biomimicry community to tackle a pressing global health challenge -- healthcare-associated infections -- the session was designed to generate unique solutions using nature's biological strategies as ideation stimulus.

Organized by GOJO with support from Great Lakes Biomimicry, the session was held at University Hospitals, bringing the challenge to life through problem space immersion at their Cleveland Medical Center.

Your company could benefit from our Biomimicry Innovation Services.

Educators Connect Around Biomimicry

Our Education Consortium gathered again in November. We heard from students in Hawken School's 7th grade biomimicry project, a collaboration between art and science teachers. University of Akron Biomimicry PhD Fellow Lamalani Siverts and others have been developing a game to teach about water quality issues in Lake Erie. Members played the first prototype and provided valuable feedback for the next iteration.

Join our Consortium list to get meeting dates. Whether you teach in a classroom, park, museum, garden, zoo or other center of learning, this group is for you. It is free, collaborative and forward-thinking. Together, we can develop a pipeline of critical thinkers and nature-inspired problem solvers.

Cool Online Resource Available from NASA

NASA has a new online science resource for teachers and students to help bring Earth, the solar system, and the universe into their schools and homes. Called NASA Wavelength, the site features hundreds of resources organized by topic and audience level from elementary to college, and out-of-school programs that span the extent of NASA science.

Educators at all levels can find educational resources through information on standards, subjects, keywords, and other details, such as learning time required to carry out a lesson or an activity, cost of materials and more.

Teachers can identify resources relevant to specific themes and current events, such as lessons dealing with NASA's Curiosity rover or using Earth science resources. For access to NASA Wavelength, visit online. Or learn more about NASA education programs.

Answering the Question: Why Earth Science?

AGI's "Why Earth Science?" brochure promotes awareness of the importance of Earth science in K-12 education. In clear, concise language, this publication explains to students why they should study this significant discipline.

The brochure is available in large quantities while supplies last in both English and Spanish. If you're a science teacher or guidance counselor who would like to share this publication with students, request your free copies now. "Why Earth Science?" explains the importance of Earth science education for success in school, careers, informed decision-making, and civic engagement.

To view the brochure (also available for download), visit online. To request 50 or more print copies, email your request and address to info@earthsciweek.org.

HOLDEN FORESTS AND GARDENS

Supplement your classroom learning by borrowing a BotaniCool Kit. Most contain curricula, pictures, books, activities and materials to enhance your students' knowledge. Each Kit may be borrowed for a three week period and is renewable by request. Kits are created using the Ohio Academic Science Content Standards and are available at no charge for Teacher Members.

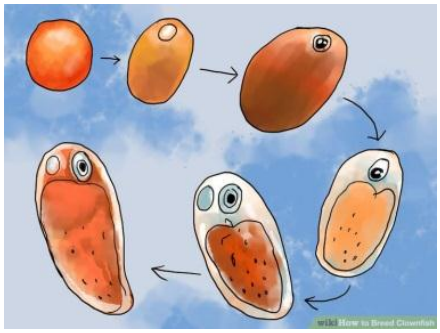
Spiny Desert and Cloud Forest (All Grades)
Seeds, Indeed! (Pre-K - Grade 1)
Plants Parts and Functions (Pre-K - Grade 1)
Linking Literature and Plant Science (Pre-K - Grade 2)
Trees, Trees, Trees (Pre-K - Grade 2)
Plants and Me (Pre-K - Grade 2)
Plants and Animal Interactions (Grades 2 - 4)
Life Cycles of Plants (Grades 2 - 4)
Soil Not Dirt (Grade 3)
Seedfolks (Grades 4 - 8)
Photosynthesis (Grades 6 - 8)
Plant Cells and Parts (Grades 6 - 8)

If you are ready to reserve a resource kit, or have any questions, email us at BotaniCoolRegistrar@cbgarden.org or call 216.707.2820.

FINDING NEMO LIED TO YOUR KIDS . . .

By Patrick Cooney

The Disney film, Finding Nemo, lied to your kids!



Disney would simply argue that they altered reality to create a more entertaining storyline, but read below for the true story, and you tell me which you think is a more entertaining.

How Finding Nemo started:

Father and mother clownfish are tending to their clutch of eggs at their sea anemone when the mother is eaten by a barracuda. Nemo is the only surviving egg and he grows up in his father's anemone before getting lost on a crazy adventure!

How Finding Nemo should have started if it were biologically accurate:

Father and mother clownfish are tending to their clutch of eggs at their sea anemone when the mother is eaten by a barracuda. Nemo hatches as an undifferentiated hermaphrodite (as all clownfish are born) while his father transforms into a female now that his female mate is dead. Since Nemo is the only other clownfish around, he becomes a male and mates with his father (who is now a female). Should his father die, Nemo would change into a female and mate with another male. Although a much different storyline, it still sounds like a crazy adventure!

As you can see, the first minute of Finding Nemo, outside of the talking fish part, is the only biologically accurate part of the movie. Considering that they demonstrate reproduction and the killing of the mother in the first minute of the movie, how did they decide that a natural sex change is outside the bubble of viewable material?

Fish reproduction is complicated, and it is especially complicated in cases like the clownfish where species are sequential hermaphrodites. These fish are born as hermaphrodites that develop as one gender before changing to the other gender at some point in their life.

Unlike clownfish that start life as males and transform into females, there are other species, like the California Sheephead, that start as females and transform into males. These opposing forms of sequential hermaphrodites are called protandrous hermaphrodites for male to female changing species, and protogynous hermaphrodites for those that change from female to male.

A sequential hermaphrodite life history strategy can be extremely detrimental if harvest of fish is allowed prior to male or female reproductive sizes. Should all males be harvested before turning into females at a certain size (or vice versa), a rapid decline would occur in the population. Understanding the triggers and sizes at which fish shift from one sex to the other greatly enhances the ability of fisheries managers to set proper length limits for long term fish population health.

In the end, the storyline for Finding Nemo was obviously entertaining for children, but as a fisheries scientist, I must admit, I find the biologically accurate storyline a bit more entertaining.

CHANGES IN THE TEACHING CAREER

Technology is changing how students learn and how teachers instruct. Professional educators must join forces using Teacher Based Teams to develop ideas on best practices that are dynamic. Innovative technology has changed the role of a teacher from lecturer to facilitator. This transition by the educator must be supported by professional development. Besides the changes in the teacher-student partnership, technology has accelerated the acquisition of information and thus learning and problem solving. For instance, we know exactly how bacteria and plants communicate, we can build and program robots to perform tasks better than humans and humans plan to land on Mars within the next 20 years! Students must be able to functions in this 'new' high tech environment and understand that this fast ride to the future is not without issues.

While technology provides lots of answers, it generates even more questions. Two questions a professional educator might ask are, "What will the classroom look like in 1, 2 and 4 years from now? And "What will my job look like?". Please share your thoughts and ideas on our Facebook page.

Come visit us at: CRCST.ORG

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CRCST
Jennie Hughes, Editor