South Dakota Science Teachers' Association

Fall 2015

October 2015 **Volume 138**

President's Letter—Julie Olson

Fall is here with all its colors, warm days and cool nights! The school year definitely started off with a bang and I've been running ever since. This is in a good way because I am definitely enjoying all of the things I am teaching. I am still teaching at Second Chance High and like the chance to share the "fun" of science with students that have had issues with school attendance for any number of reasons.

The students in Environmental Science (and other courses) got to participate in assessing the water quality of our lake which turns a lovely pea-green every summer due to blue-green algae. The local wildlife biologist with Pheasants Forever and former student of mine, Mike Blaalid, came out with us and shared his experiences and knowledge with the kids. They saw an albino (or leucistic) swallow as well as an osprey fishing! Over the course of two days, we tested 9 spots and hope to make this a bi-annual event to establish a good data base. This was possible with the help of a KIDS grant from the local business people. It really makes a different when the community steps up and supports education.

A big point to make with this is that you shouldn't be afraid to ask those experts from the community to come to your classes. Their experiences and knowledge as well as other connections can really add to your classroom. We may be able to connect with the local game warden for a fish survey! Having done this before, I just know the kids would love it. Did I mention how much they like to wear chest waders – what a fashion statement! (really – they love wearing them!)

Another project they participated in was the RhizoDive with Carl Fellbaum of SDSU. We first had to find clover – easier said than done. Another teacher had some growing on their farm so we were in luck. The seeds were prepared and planted but only three meager plants sprouted. This provided lots of potential questions to be answered (Questioning – one of the practices of the SDSS). A "history" lesson was also learned in the process of digging up the clover and soybeans. It is not easy breaking sod and we discussed what the pioneers did!

Who would have known that somehow these two projects would somehow be connected? Mike mentioned that he was going to put in a pollinator plot for a local industry not so far from the school. Well – too make a long story short, we are going to help and also put in some red clover so we can continue working with the RhizoDive project.

It's also science fair season. Both of these projects have also spawned numerous ideas for research projects. I am including the contact information for the ISEF affiliated fairs. Students can also participate in the Its All About Science fair in June. In the famous words of Miss Frizzle of Magic School Bus fame "Take chances, make mistakes, get messy."

Sincerely,

Julie Olson

SDSTA President 2014-2016

Science Competitions

Science Olympiad—

Students compete for awards in teams of two/ three or by themselves in science events. Examples of past events: Tower building, astronomy, Bridge building, egg drop, protein modeling. Many of these are great learning activities to use in the classroom. The event is held on the USD campus Mar. 19. 2016. Go to the South Dakota Science Olympiad website at https:// www.google.com/ #q=SD+science+olympiad for more information and team entry forms.

ISEF Affiliated Fairs

Science Fair—South Dakota has four regions for students to compete in with high school students having a chance to qualify to attend the International Science and Engineering Fair to be held in Phoenix , Arizona this year in May.

Northern South Dakota Science and Math Fair

Dr. Jodie Ramsay: Biology Department, 1200 S. Jay St., Northern State University, Aberdeen, SD 57401-7198 SPONSORS: Northern State University. TERRITORY: the counties of Roberts, Marshall, Brown, Day, Clark, Spink, Hand, Hyde, Sully, Potter, Walworth, Edmunds, Campbell, McPherson, Faulk and Grant (with the exception of Grant-Deuel High School)

Eastern South Dakota Science and Engineering Fair

Mr. Brad Blaha: WEB SITE: http://www.sdstate.edu/sciencefair

ABS Administration Office, South Dakota State University, Box 2207, SAG 156, Brookings, SD 57007. SPONSORS: South Dakota State University and Sigma Xi and The SDSU Foundation. TERRITORY: the South Dakota counties of Beadle, Codington, Kingsbury, Lake, Brookings, Hamlin, Deuel, Moody, Minnehaha, Turner, Lincoln, Yankton, Clay, Union, and Sioux County in Iowa. Also covers Grant-Deuel High School in Grant County, South Dakota.

South Central South Dakota Science and Engineering Fair

Mrs. Jody A Strand: WEB SITE: http://www.dwusciencefair.com , Dakota Wesleyan University, 1200 West University, Mitchell, SD 57301 SPONSORS: Dakota Wesleyan University, The Mitchell Daily Republic, Twin City Fan & Blower, Touchstone Energy, 6th District Medical. TERRITORY: the counties of Bon Homme, McCook, Miner, Hutchinson,Davison, Hanson, Sanborn, Jerauld, Aurora, Buffalo, Gregory, Brule, Charles Mix, Douglas, Tripp, Lyman, Mellette, and Hughes

High Plains Regional Science and Engineering Fair

Dr. Donna Kliche—Atmospheric Sciences. South Dakota School of Mines & Technology. 501 E. St. Joseph Street Rapid City, SD 57701 Sponsor: Sout Dakota School of Mines & Technology **Territory**: the counties of Butte, Lawrence, Pennington, Custer, Fall River, Meade, Shannon, Haakon, Jackson, and Bennett

EarthSky.org

The website itself is a great source for earth and space science current events. I signed up for daily emails (like this one) for easy access to the articles. They also post updates to Facebook. The articles are a great supplement to my lessons as well as for those classes that end with a few minutes to spare! The graphics look great pulled up on the big screen! They also sell a great lunar calendar poster! For more information, contact Jennifer Fowler (jennifer.fowler@k12.sd.us)

Photo from Earthsky.org

EARTH SCIENCE WEEK

Earth Science Week Classroom Activities: http://www.earthsciweek.org/classroom-activities

Here you can find suggested Earth science related activities. Most are categorized based on the Next Generation Science Standards, and the earlier National Science Education Standards. Activities are also marked with an appropriate grade level. These Earth science activities are fun and educational. To access these activities, click on the activity name in the chart .

Promote Student Research and Win Money for Your Classroom!:

The South Dakota Experimental Program to Stimulate Competitive Research (SD EPSCoR) program is a statewide effort whose goal is to expand our state's research capacity and increase our STEM workforce through targeted investments in STEM research and education. The SD EPSCoR Program is funded by major grants from the National Science Foundation and the South Dakota Governor's Office of Economic Development. One of the ways that we are trying to achieve this goal is by increasing the number of schools and students participating in the state's Regional Science Fairs. We currently provide a yearly $5000 award titled the "SD EPSCoR High School Research Institution Award" to rural and economically disadvantaged schools and provide opportunities for exemplary student research projects to participate in the International Science and Engineering Fair (ISEF). As part of our continuing efforts to increase the number of participating schools and students and to raise the level of the student research projects that are presented, we are pleased to announce a new, school-based, science-fair team challenge competition that will take place at the regional science fairs beginning this year. This challenge will award three cash prizes to schools whose top three scoring student research projects have the highest average score. The prizes are $1000 for the first place team, $750 for the second place team, and $500 for the third place team. The funds may be used by the school for any investment in STEM equipment, supplies or related investments that will increase student participation in the state's science fairs and allow them to undertake more in-depth research projects. SD EPSCoR recognizes your efforts in both guiding students in their research as well as in the classroom. These programs are a way for us to say thank you for all that you are doing to help prepare the next generation of South Dakota's scientists, engineers and mathematicians.

SD EPSCoR
RESEARCH. EDUCATION. ECONOMIC DEVELOPMENT.

If you have any questions about this program, please do not hesitate to contact me or the SD EPSCoR Office. We look forward to seeing you at your regional science fair this spring .

Water Quality Index Calculator

www.swrp.esr.pdx.edu/teacher_info/presentations/WQI_**calculator**.xls

This is a great tool for classes that do water quality testing. You can put in just the parameters you have data for and it will give you a water quality rating. Of course, the more tests, the more reliable.

Youth Garden Grant Application

https://survey.garden.org/index.php?sid=44285&newtest=Y&lang=en

The 2016 Youth Garden Grant supports educational garden projects that enhance the quality of life for students and their communities. Any nonprofit, school, or youth program planning a new or expanding an established garden program serving at least 15 youth between the ages of 3 and 18 is eligible to apply. The selection of winners is based on demonstrated program impact and sustainability.

Previous Youth Garden Grant winners who wish to reapply must wait one year after receiving the award and must prove that their garden programs have been significantly expanded.

A total of 20 programs will receive award packages valued at $500 that includes: a tool package from Ames, a seed sheet from Cloudfarm, a gift certificate for plants from Bonnie Plants, a cedar raised bed from Earth-easy, a Green Cycler and Worm Bomb from Ecotonix, a seed donation from High Mowing Organic Seeds, a drip irrigation starter kit from Rain Bird, a Compost Sak from SmartPots, a house and sprayer from Gardener's Supply, and a curriculum package from Kidsgardening.org **Applications are due December 1, 2015.** Winners will be announced and notified on January 2nd, 2016. Award packages will be mailed in mid-March.

Reporting Requirement. All winners are required to complete an end of the year survey, providing a minimum of 5-10 digital images of the garden program and parental release forms along with an updated program summary within six months of the award date.

Water Quality Index Calculator

Parameter	TEST RESULT	Units	Q-value	Weighting Factor	Weighting Factor	Subtotal
pH		pH units	NM	0.12	NM	NM
Change in temp		degrees C	NM	0.11	NM	NM
DO		% saturation	NM	0.18	NM	NM
BOD		mg/L	NM	0.12	NM	NM
Turbidity		NTU	NM	0.09	NM	NM
Total Phosphorus		mg/L P	NM	0.11	NM	NM
Nitrate Nitrogen		mg/L NO3-N	NM	0.10	NM	NM
E. coli*		CFU/100 mL	NM	0.17	NM	NM
Fecal Coliforms*		CFU/100 mL	NM	0.17	NM	NM

**Only use one microorganism, not fecal coliforms AND E. coli*

NM = Not Measured

TOTALS: **0.00** **0.00**

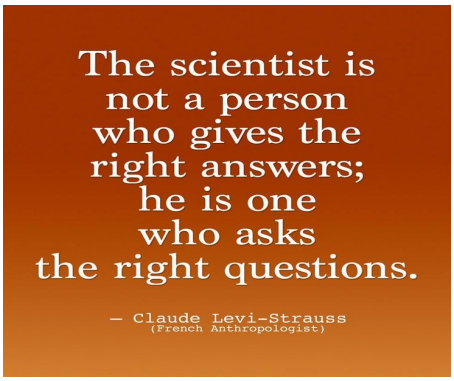
Water Quality Index = **NM**

Water Quality Rating = **NM**

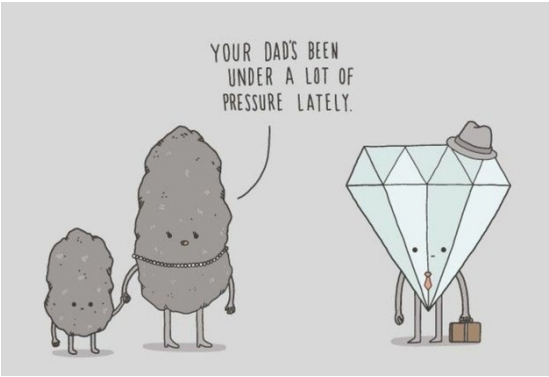
Call for Outstanding Biology Teacher of the Year Nominations

Pleas nominate a deserving teacher for the Outstanding Biology Teacher Award (can be a life science teacher) . There are many deserving teachers out there that need to be recognized. They have to have taught and are currently teaching life science for three years or more. Send an email with your name and email along with the nominee, their email and school to Ju-

NABT
National Association of Biology Teachers



Some days we feel like diamonds….



VEX ROBOTICS

The VEX Robotics Competition, presented by the Robotics Education & Competition Foundation, is the ultimate STEM activity for middle school and high school students (ages 11-18).

Each year, an engineering challenge is presented in the form of a game. Students, with guidance from their teachers and mentors, use the VEX Robotics Design System to build innovative robots designed to score the most points possible in qualification matches, elimination matches and Skills Challenges. In addition to having a great time and building amazing robots, through their participation in the VEX Robotics Competition and their work within their team, students will learn many academic and life skills.

Registration for a VEX Robotics Competition team costs $100. Additional teams from the same schools can register for $50. Tournament entry fees vary by event.

The VEX Robotics Competition game for the 2015-2016 season is VEX Robotics Competition Nothing But Net, and was revealed at the 2015 VEX Robotics Competition World Championship.

Water Science—US Geological Survey

From the Water Science Center section of the US Geological Survey (USGS). We have a wonderful Web site for teachers to use to learn all about water, the Water Science School (http://water.usgs.gov/edu/). I want to let science teachers in South Dakota know this resource exists for them to use.

A newer section is about the Water Cycle, especially made for 3 levels of school students.

We feature a great diagram and also an Interactive Section where a student can mouse hover over sections of the diagram and get popup information and pictures about that topic, along with links to more information.

All of this is available for 3 different age levels.

And, the diagram is available in over a dozen languages, including Spanish!

Main diagram: http://water.usgs.gov/edu/watercycle-kids.html

Interactive Center:

Beginner: http://water.usgs.gov/edu/watercycle-kids-beg.html

Intermediate: http://water.usgs.gov/edu/watercycle-kids-int.html

Advanced: http://water.usgs.gov/edu/watercycle-kids-adv.html

We have "Water Science School" bookmarks which I can send you or to any school or group, if you wish.

Contact Howard Perllman at:

To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science. Albert Einstein.

Science Safety Resources from NSTA

From NSTA: U.S. Department of Health and Human Services: The National Library of Medicine (NLM) Specialized Information Services (SIS) recently released a new Enviro-Health Links page, "Laboratory Safety," which offers links to information for clinical, academic, and school laboratories, including resources for handling chemical, biological, and nanotechnology safely. Also included are links to regulations and policy, hazard analysis, MSDS, waste management, and preformulated TOXNET and PubMed searches.

American Association of Poison Control Centers (AAPCC): Find your poison control center: 800-222-1222

American Chemical Society

Chemical Safety for Teachers and Their Supervisors, Grades 7–12 (PDF)

Recommendations for Shared Goggle Cleaning (PDF)

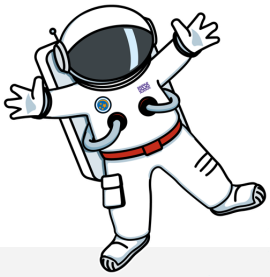
Reducing Risks to Students and Educators from Hazardous Chemicals in a Secondary School Chemical Inventory (PDF)

Chemical Storage Resources

Council of State Science Supervisors: Science and Safety: Making the Connection, General Lab Safety Recommendations, Resources for Safe Chemical Management

Environment, Health and Safety Online: Chemical Safety Data Sheets

Freebies:



Spacesuit Interactives elementary

A spacesuit is a personal, mini-spacecraft equipped to enable an astronaut to survive, communicate, and work in the harsh space environment. Educators can access an interactive learning experience about spacesuits—created by NASA and appropriate for all ages—that explains the mechanics behind these "personal spacecraft" and how they work to keep a person alive in space. Want to know more about spacesuits? Check out a photograph of a spacesuit (http://1.usa.gov/1OeTDB8) that allows you to click on its individual parts (e.g., pants, helmet, tethers, cuff, arm, layers) to read a description of the part and learn what it does.

Progressive City Planners middle level

In this interdisciplinary science and social studies lesson, middle level students create imaginary cities, deciding where to place amenities such as parks and libraries, and deal with drawbacks such as environmental hazards. Then students compare their imaginary cities to the real world, where resources and hazards often aren' t distributed fairly and certain areas and populations suffer disproportionately from environmental burdens. The lesson promotes discussion about the issue of environmental racism and empowers students by having them propose solutions.

Be a Bioengineer high school/college game

How do you keep an artificial limb attached to the body? What lab-grown organ have scientists successfully transplanted into patients? You can find answers to these and other questions in Want to Be a Bioengineer?, a game for high school and college students designed by NIH's National Institute of Biomedical Imaging and Bioengineering. Through a series of questions and answers, the game shows students how bioengineers are improving people's lives, from helping paralyzed individuals stand, to regrowing fingertips, to finding new ways to see inside the body. The game promotes the pursuit of STEM careers, introducing the fields of rehabilitation engineering, regenerative medicine, and biomedical imaging.

Global Competency Lessons all grade levels

View and download lessons designed to develop students' global competency skills. The interdisciplinary lessons were created by National Education Association (NEA) Global Learning Fellows and offer numerous possibilities for integration with science, social studies, and language arts classes. Lessons are available for all levels along the K–12 spectrum. Selected titles include Environmental Portraits: More than Face Value! (elementary); Life-boat Earth a Global Perspective (middle); and Magnetic Levitation Train (high school). The site features an annotated list of all the lessons.

InterestID all levels—differentiated instruction based on interests!

This tool from NextLesson.org can encourage differentiated instruction in the classroom by helping teachers discover students' interests and providing standards-supported lesson topics students love. Through the online tool, students share favorite interests within categories such as sports, books, movies, food, music, and gadgets. Teachers view a results summary displaying the top categories, most popular interests within those categories, and recommended lessons from NextLesson based on student interests. Teachers can view summaries for individual students or classes as a whole, and track changes over time. (Free teacher registration is required.)

Animalearn
ANIMALS, ETHICS, AND EDUCATION

Submitted by Janet Wagner

Human Anatomy			
Name	**Platform**	**URL**	**Fee**
BioDigital Human	Website	https://www.biodigitalhuman.com/home/	
The Anatomy Zone	Website	http://www.anatomyzone.com/	
Khan Academy	Website	https://www.khanacademy.org/science/biology/human-biology	
Anatronica: Interactive Anatomy 3D	Website	http://www.anatronica.com/	
Health Line's Human Body Map	Website	http://www.healthline.com/human-body-maps	
InnerBody	Website	http://www.innerbody.com/	
MedTropolis Virtual Body	Website	http://medtropolis.com/virtual-body/	
National Geographic: Human Body	Website	http://science.nationalgeographic.com/science/health-and-human-body/human-body/	
The Human Body	Website	http://www.worldinvisible.com/apologet/humbody/index.htm	
Visible Body 3D	Website	http://www.visiblebody.com/index.html	✓
Anatomy and Physiology Revealed	Website	http://www.mhhe.com/sem/apr3/	✓
Zygote	Website	http://www.zygote.com/	✓
ADAM Education	Website	http://adameducation.com/	✓
Cyber Science 3D™ Introductory Human Anatomy	Website	http://www.cyberscience3d.com/content.php?SC=HA	✓

Circulatory System			
Name	**Platform**	**URL**	**Fee**
US Nat'l Library of Medicine's Circulation Station	Website	http://www.nlm.nih.gov/changingthefaceofmedicine/activities/circulatory.html	
Texas Heart Institute: Anatomy of the Heart	Website	http://anatomycorner.com/main/image-gallery/cat-dissection/	
University of Minnesota: Atlas of Human Cardiac Anatomy	Website	http://www.vhlab.umn.edu/atlas/index.shtml	
***Web*MD's Heart Health Center**	Website	http://www.webmd.com/heart/picture-of-the-heart	

Virtual Labs and Surgery Resources			
Name	**Platform**	**URL**	**Fee**
HHMI: The Virtual Lab Series	Website	http://www.hhmi.org/biointeractive/virtual-lab-series	
EdHeads	Website	http://www.edheads.org/#	
Virtual Open Heart Surgery	Website	http://www.abc.net.au/science/lcs/heart.htm	
BBC Science Human Anatomy Games	Website	http://www.bbc.co.uk/science/humanbody/body/index.shtml	
Dr. Saul's Biology in Motion	Website	http://biologyinmotion.com/	

Technology Resources—submitted by Tricia Neugebauer, Mitchel Senior High

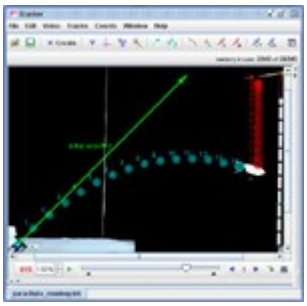
Technology	Useable on	What it does	Site
Anatomy Arcade	internet	body system games	http://www.anatomyarcade.com/index.html
Actively Learn	Internet	read and interact with text online	http://www.activelylearn.com/
Annotate It	internet	annotate directly on any page	http://annotateit.org/
Answergarden	internet, iPad	feedback, participation, brainstorming	http://answergarden.ch/
BigHugeLabs	internet	create almost anything - magazine covers, trading cards, etc. TONS of free resources	http://bighugelabs.com/
Braingenie	internet	learn, practice, and quiz on concepts	https://braingenie.ck12.org/
Camscanner	Android or iPhone	Turn your phone and tablet into scanner for intelligent document management	Google Play, iTunes
Class Dojo	All	behavior tracker	https://www.classdojo.com/
Class Tools	internet	various - games, quizzes, fakebook, diagrams,	www.classtools.net
Cliptomize.com	internet	create storyboards, scrapbooks, etc.	http://cliptomize.com/
Diffen	internet	use to compare and contrast anything	www.diffen.com
Edheads	internet	science and math games	http://www.edheads.org/
Edmodo	All	connect with students, use as blog, discussion, class webpage, etc.	www.edmodo.com
Emaze	internet	presentation creator	https://www.emaze.com/
Evernote	All	portfolio, online binder	https://evernote.com/
ExitTicket	All	check for understanding	http://exitticket.org/
Explain Everything	All	interactive screencasting	http://en.linoit.com/
Fakebook	internet	create fake "facebooks"	http://www.classtools.net/FB/home-page
Ge.tt	internet	upload and share files quickle	ge.tt
Go Soap Box	All	check for understanding	http://www.gosoapbox.com/
InstaGrok	All	interactive concept map	https://www.instagrok.com/
JoinMe	Windows	virtual screen sharing w/ audio and video	https://www.join.me
Kahoot	Any device	take quizzes or surveys	https://getkahoot.com/
Kaizena	googledocs	voice your notations instead of writing them	in Google Docs
Kidblog	All	kids can blog safely, create lab notebooks, lab reports, portfolios, etc.	http://kidblog.org/home/
Learning In Hand	internet	resource for more links and activities	http://learninginhand.com/infographics/
Lino	internet	ideas, sharing, photos	http://en.linoit.com/
Live Binders	All	portfolio, online binder	http://www.livebinders.com/welcome/home
Lucidchart	internet	create flowcharts, etc. (replace inspiration)	www.lucidchart.com
Mindomo	All	mind mapping - replace Inspiration *Can be linked to Google Drive!	www.mindomo.com
MoveNote	All	screen capture, voice over, video recording	https://www.movenote.com/
My Brain Shark	All	creating videos, voiceovers	http://www.brainshark.com/mybrainshark
My Homework Planner	All	Interactive Planner for students and teacher	Google Play, Chrome Store, iTunes
Nearpod	All	interactive mobile presentations	http://www.nearpod.com/home.php
Padlet	internet	virtual wall to post any content	https://padlet.com/
PhET	internet	interactive simulators	https://phet.colorado.edu/

Picktochart	internet	Create infographics	http://piktochart.com/
Plickers	teacher device w/ camera	collect real-time formative assessment data without the need for student devices	https://plickers.com/
Poll Everywhere	All	polling, quiz, feedback	http://www.polleverywhere.com/
Postermywall	internet	create posters, collages, etc. online. Editable templates	http://www.postermywall.com/index.php/
Powtoon	internet	create presentations or cartoons	https://www.powtoon.com/
QR Generator	any device	create QR codes for videos or website for students to quickly access	http://www.qr-code-generator.com/
Quizlet	internet	study tool, flashcards, etc	https://quizlet.com/
Read Write Think	internet	multiple uses for creating products	www.readwritethink.org
Remind	All	send reminders and updates to students and parents	https://www.remind.com/
School Tube	internet	videos for teachers and students	http://www.schooltube.com/
Schoology	All	Learning Manangement System	https://www.schoology.com/home.php
Screencast-o-matic	internet	screen capture with voice over	http://www.screencast-o-matic.com/
Scrible	internet	annotate directly on any page	www.scrible.com
Skitch	Apple, Windows	Get your point across with fewer words using annotation, shapes and sketches, so that your ideas become reality faster	https://evernote.com/skitch/
Socrative	All	tutorials, games, and student assessment	http://www.socrative.com/
Storybird	internet	create stories with pictures	https://storybird.com/
Testmoz	internet	create tests online with instant results for teachers and students	https://testmoz.com/
Tiddla	internet	web-based white board where students can collaborate together	http://www.twiddla.com/
Timetoast	internet	make timelines online and add pictures or files	https://www.timetoast.com/
Voki	internet	create a speaking Avatar	www.voki.com
Wevido	All	Creating Videos - collaborative cloud based	https://www.wevideo.com/schools
Wixie	All	online publishing and creativity platform that lets students share what they know through their writing, their voice, and their art	https://www.wixie.com/
Wolfram Alpha	internet	research anything - great for risk and diseases etc.	http://www.wolframalpha.com/
Wordle	internet	create word clouds	http://www.wordle.net/
Wunderlist	All	to do lists - great for projects, etc.	https://www.wunderlist.com/
Zamzar	internet	convert files	www.zamzar.com
Zaption	internet	turn online videos into interactive learning experiences	https://www.zaption.com/
Zimmer Twins	internet	cartoon creator	http://zimmertwinsatschool.com/

Video Analysis Thoughts and Resources

By Larry Browning, SDSU Physics [Larry.Browning@sdstate.edu]

When it comes to analyzing motion and plotting and finding velocity and acceleration for something it is often much easier to use Video Analysis (VA) to examine a video and graph the motion. This technique has been made much easier in recent years by the inclusion of video analysis capabilities in Vernier Software and Technologies' Logger Pro software (http://www.vernier.com/) or with the freeware program Tracker (http://physlets.org/tracker/). Other similar programs exist (e.g. PASCO Capstone) but Logger Pro is available to many South Dakota teachers and Tracker can be downloaded easily.



Using Video Analysis requires the user to review what is important in a motion measurement: origin, coordinate system, picture scale, direction, and the vector nature of motion. Choices of origin, coordinate orientation and direction, and picture scale must be made before the subject's motion can be digitized and plotted in a meaningful way. With today's modern cell phones (and some digital cameras), you may also have to choose the time rate at which a video was recorded. Once someone has mastered the mechanics of how to digitize an object's motion as captured with a video, the fun of understanding what it means begins.

Often the biggest stumbling blocks to using Video Analysis is making or finding a good video. Today's cell phones often are a great way to make videos but often the trouble is in transferring the video into Logger Pro or Tracker (and making sure it is in the proper format). Vernier has some tips for taking videos for VA at http://www.vernier.com/til/1464/ and there is a wealth of information at http://www.vernier.com/til/1925/ which is geared for Vernier products but has some good information for anyone who wants to use Video Analysis or is having some difficulties. In a pinch, good videos can be downloaded at a number of sites. Vernier maintains a clearing house of such sites is at http://www.vernier.com/til/1619/ . However, one of my favorites – Direct Measurement Videos – is not on that list but can be found at https://serc.carleton.edu/sp/library/dmvideos/index.html .

With a little practice I've found that Video Analysis is a powerful tool to engage my students, examine motion, and introduce measurements concepts and their mathematical interpretation and representation. It allows data to be taken quickly so that more time can be spent on understanding concepts and principles – provided some of the technology stumbling blocks can be easily overcome. Video Analysis is also an affordable alternative to having a number of other sensors in some (but not all) ap-

Gelatin Animals— questions directed to Julie.olson@k12.sd.us

Purpose: To determine what kind of microclimate will "protect" the Jello-animal from freezing on a cold winter day.

Materials:

Film canisters
Jello mixed to directions but still liquid and still warm

Procedure:

Fill canisters approximately 2/3rds full – try to make them a even as possible.
Instruct students to go quickly outside and find a place for their "animal" to hide/stay as warm as possible – a microclimate.
Students will come back into the classroom to discuss the places they chose and why.
After 10 minutes (if it's really cold – or 15 if it's about 30° F) have them collect their animals.
Animals have "died" if the gelatin has started to set up.

*extensions: provide students with feathers, fur, mittens of various composition, grease, bark, etc. to put around their "animals" before placing outside in the same place e.g. on the sidewalk. Discuss animal adaptations.

Donors Choose

Teacher or student led grant opportunities. Free registration—donorschoose.org You can also search for discipline specific projects to support.

South Dakota Funding Opportunities

To take advantage of the opportunities below, log in and submit a project. Read each offer and "How it works" to learn how your project can be considered for funding.

Double Your Impact From DICK'S Sporting Goods Foundation	How it works

50% match offer for Team Sports projects. To qualify, be sure to select Team Sports as a subject area. If you don't personally coach a team sport, check in with your school's coaches and post a project on their behalf! Learn more before posting. Projects will be hand-selected once every week.

Double Your Impact From Think It Up	How it works

Half-off opportunity for 7-12 grade teachers who team up with their students and submit a **student-led project**. Your students will be in charge of brainstorming the idea and writing part of the essay and you'll submit the project. Learn how to submit student-led project.

Double Your Impact From Wonder Workshop	How it works

50% match offer for class projects requesting "Dash and Dot" products directly from MakeWonder.com. To qualify, enter "Wonder Workshop Dash and Dot" in your essay. Projects must request materials through DonorsChoose.org special request from MakeWonder.com. Only teachers who have enough points (6) can submit a project for this offer. Projects will be hand-selected every 3 weeks.

Selective Funding From the Lily Sarah Grace Fund	How it works

Full funding available for select K-5 projects that use Arts & Creativity to teach academic lessons, focusing on these 3 Key Competencies: creativity, critical thinking and collaboration. Read the full guidelines and more about the key competencies before submitting your project. After your project is posted, fill out the form and be sure to include your project id. Projects may cost up to $450 total (including all fees and the optional donation). Projects will be selected and funded at the discretion of the Lily Sarah Grace Fund.

Continue your education as a Coyote!

University of South Dakota School of Education

Undergraduate Teaching Majors

K–8	Elementary Education
7–12	Biology, Chemistry, Earth Science, English, History, Mathematics, Physics, Political Science, Speech Communication, Theatre
K–12	Art, French, German, Music, Physical Education, Spanish, Special Education*

*Double Major: The Special Education major must be paired with Elementary Education or a 7–12/K–12 teaching major.

Undergraduate Non-Teaching Majors

Kinesiology and Sport Science
(Exercise Science or Sport Management Specialization)

http://admissions.usd.edu

Curriculum and Instruction

M.A.	Elementary Education, Technology, Secondary Education, Special Education
Ed.S., Ed.D.	Curriculum and Instruction

Counseling and Psychology in Education

M.A., Ed.S, Ph.D.	Human Development and Educational Psychology
M.A., Ed.S, Ph.D.	Counseling
Ed.S., Ph.D.	School Psychology

Educational Administration

M.A., Ed.S., Ed.D.	PK–12 Principal, Director of Curriculum, School District Superintendent
Ed.S, Ed.D.	Director of Special Education
M.A., Ed.D.	Adult and High Education

Kinesiology and Sport Science

M.A.	Kinesiology and Sport Science

(Exercise Science or Sport Management Specialization)

www.usd.edu/grad

UNIVERSITY OF SOUTH DAKOTA

SCHOOL OF EDUCATION STUDENT SERVICES
414 East Clark Street | Vermillion, SD 57069 | www.usd.edu/ed | 605-677-5612

2016 SDCTM/SDSTA JOINT CONFERENCE

Conference information and program booklets will be available online at www.sdctm.org and www.sdsta.org

ADVANCE REGISTRATION

Crossroads Events Center, Huron South Dakota
February 4-6, 2016 1-800-876-5858

Please print clearly. Postmark by January 20, 2016. After this date, please register on-site.

Name _____
Permanent Address _____
City _____ State _____ Zip _____
School/District _____ **E-mail** _____
Home phone _____ **School Phone** _____

Please check the appropriate categories for membership, conference registration, and payment.

1. SDCTM/SDSTA MEMBERSHIP(s) and DUES

Please check the appropriate categories. ***You may join one, both, or neither organization.***

Begin/renew SDCTM (math) for one year

_____ Elementary $5
_____ Middle School $20
_____ High School $20
_____ Post-Secondary $20
_____ Student $5
_____ Retired $5
_____ Other $20

Begin/renew SDSTA (science) for one year

_____ Elementary $5
_____ Middle School $20
_____ High School $20
_____ Post-Secondary $20
_____ Student $5
_____ Retired $5
_____ Other $20

Note: First year teachers are eligible for a scholarship providing a free registration. See www.sdctm.org for details.

2. CONFERENCE REGISTRATION

Please check the appropriate categories. Noon luncheon is included for each day that you register.
NOTE: The Friday night banquet is NOT included. *Banquet tickets may be purchased for $25 each.*

I will attend the conference on *(check one)*: _____ Friday _____ Saturday _____ Both days

SDCTM or SDSTA Member

_____ One day $50
_____ Two days $75

Non-Member

_____ One day $100
_____ Two days $125

Student Member

_____ One day $15
_____ Two days $25

College credit will be available; information/registration will be available at the conference registration table.

3. PAYMENT: *By Check Only*

Make checks payable to SDCTM.
SDCTM does ***NOT*** *accept credit cards or purchase orders.*

Membership(s) total $ _____
Registration $ _____
Friday Night Banquet ($25 each) $ _____

TOTAL ENCLOSED $ _____

Requests for refunds must be received by January 20, 2016

4. SEND THIS FORM WITH PAYMENT

Steve Caron
907 South 16th Street **School phone (605) 725-8208**
Aberdeen, SD 57401 **Home phone (605) 226-2292**

Email: steve.caron@k12.sd.us

Advance registration must be postmarked by ***January 20, 2016.***
After this date, please register on-site.

Please check here if you have also submitted a speaker proposal form for the 2016 Conference. ☐

Contact SDCTM with any special needs requests as defined by ADA by emailing Jean Gomer at jeanann@itctel.com by January 20, 2016

Celebrate the fall season and Halloween by making your very own NASA Space Place pumpkins with these easy-to-use stencils!

http://spaceplace.nasa.gov/pumpkins/en/

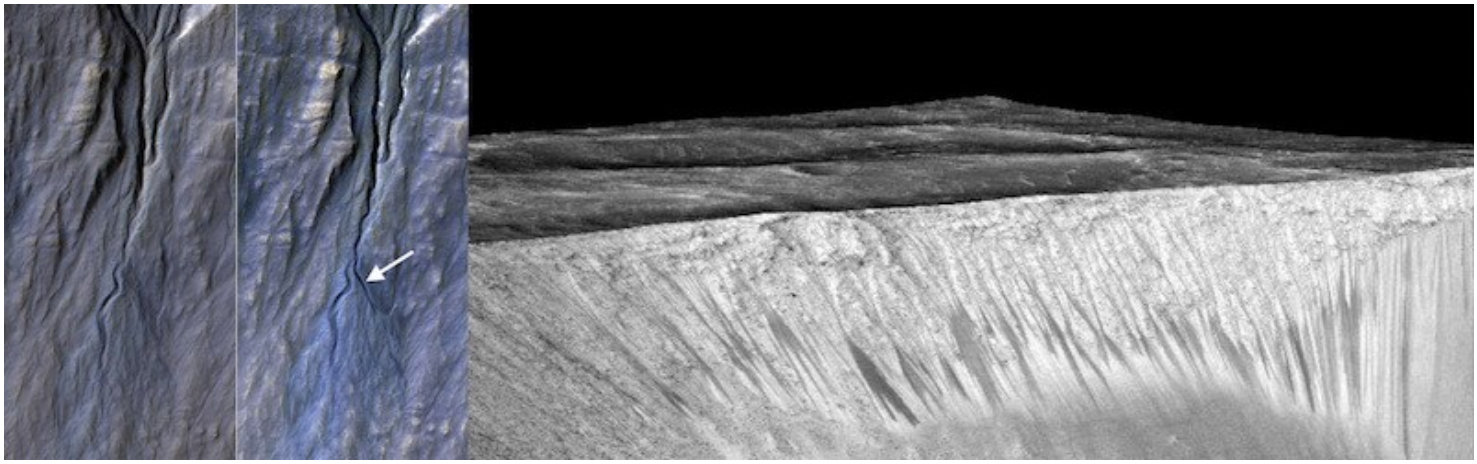
Some of the shapes available are Galaxy, Sun, Volcano, Saturn and Spacecraft.

How we know Mars has liquid water on its surface

by Ethan Siegel

Of all the planets in the solar system other than our own, Mars is the one place with the most Earth-like past. Geological features on the surface such as dried up riverbeds, sedimentary patterns, mineral spherules nicknamed "blueberries," and evidence of liquid-based erosion all tell the same story: that of a wet, watery past. But although we've found plenty of evidence for molecular water on Mars in the solid (ice) and gaseous (vapor) states, including in icecaps, clouds and subsurface ices exposed (and sublimated) by digging, that in no way meant there'd be water in its liquid phase today.

Sure, water flowed on the surface of Mars during the first billion years of the solar system, perhaps producing an ocean a mile deep, though the ocean presence is still much debated. Given that life on Earth took hold well within that time, it's conceivable that Mars was once a rich, living planet as well. But unlike Earth, Mars is small: small enough that its interior cooled and lost its protective magnetic field, enabling the sun's solar wind to strip its atmosphere away. Without a significant atmosphere, the liquid phase of water became a virtual impossibility, and Mars became the arid world we know it to be today.



Images credit: NASA/JPL-Caltech/Univ. of Arizona, of a newly-formed gully on the Martian surface (L) and of the series of gullies where the salt deposits were found (R).

*This article is provided by **NASA Space Place.** With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit **spaceplace.nasa.gov** to explore space and Earth science!*

Earth Science Essentials--Advanced

Geos 490/590 (4 cr) through Minnesota State University Moorhead
Spring Term 2016, Starting in January

An online course for every secondary science teacher who wants to renew and enrich their teaching of earth science.

Course Content

In-depth examination of earth science concepts across the discipline, including Physical Geology, Historical Geology, Weather and Climate, and Planetary Science.
Emphasis on good classroom investigative practices, including doing experiments, interpreting graphs, applying scientific models, and using maps.
Engagement with aspects of reading the story of the Earth that underpin the science standards you teach in your own classroom.
Opportunities to discuss curricular applications with other educators.

What to expect

Not just the facts--it's about how the universe works and how we know it works that way.
Many activities that can be adapted for secondary science students.
Lots of discussions, labs, and figuring things out.
An amazing journey in science literacy--something new for everyone.
Like no other online course.

Costs

Undergraduate credit = $921 + fees, graduate = $1440 + fees
for Minnesota, North Dakota, South Dakota and Wisconsin residents.

More Information

Questions—colson@mnstate.edu
More information and course details at--http://earthscienceissues.net/MyChallenges/Course.html

Dear Earth Science Colleagues,

I'm offering an online course this coming spring term through Minnesota State University Moorhead that's appropriate for science teachers wishing to renew and strengthen their foundation in earth science. Over the years, many teachers have asked about online options for earth science courses that go beyond standard introductory material. Although this course begins with the basics, it includes a variety of in-depth examinations of earth science ideas presented in a way that I hope will inspire new earth science investigations in your own classrooms. Attached is a brochure for the course with a link to additional information about the course and me, should you be interested.

Please contact me if you have questions.

Sincerely,

Russ Colson, Professor of Geology, MSUM

colson@mnstate.edu 218-477-5832

SDSU Physics Bowl XLII

Friday, April 29, 2016

Department of Physics
SDEH(A) 255 – Box 2222
Brookings, SD 57007
Phone: 605 688 5428
http://www.sdstate.edu/phys/

The Physics Department of SDSU would like to invite your school to enter a team in Physics Bowl XLII (in conjunction with Engineering Expo). It is intended to be a fun, exciting and rewarding experience for your students. This contest, which starts with registration at 11:30 am, is an opportunity to make learning physics fun. The contestants experience the excitement of competition and meet other students from a variety of schools. Some of the contestants will carry away substantial cash prizes for themselves and a plaque for their school.

The following awards will be presented to each member of the top five teams: $40 to each member of 1st place, $30 to each member of 2nd place, $20 to each member of 3rd place, $15 to each member of 4th place and $10 to each member of 5th place. The top five schools will also receive a plaque appropriate for display. Each team sponsor also receives a physics memento of some sort in appreciation of his/her efforts.

Each school is eligible to enter one team, up to 3 student members, to compete against the other schools. Members of the competing teams must be taking or have had physics at the school they represent. Science teachers may decide in their own way how to select the team members for their school. If you are interested in participating, return the entry form and we will send you complete details at a later date.

This contest is now a popular event known state wide. If you have never entered a team before, please consider giving it a try. Teams which have entered apprehensively have found the experience to be full of fun and excitement and return year after year. The level of questions is appropriate so that no one ever feels embarrassed for not knowing the proper answer, and with a little luck, his/her estimates and guesses might even score high enough to earn one of the prizes. The competition puts the fun and fascination of physics out where everyone can enjoy it.

Questions will be based on topics such as basic mechanics, heat and thermodynamics, basic electricity, optics, famous physicists, etc. Each team will answer questions posed by the quizmaster. Answers are scored according to accuracy, speed or perhaps both. Each question has a point value, and the team with the highest score wins.

Only the first 18 teams to enter by contacting Sally.Krueger@sdstate.edu with the intention to compete will be accepted. Do it early to avoid disappointment!

School _____ Advisor_____

Address_____

E-mail address:_____ Phone_____

Now accepting applications for 2016

OXFORD, Ohio (Sept. 30, 2015) – Miami University's Project Dragonfly is accepting applications for 2016 Earth Expeditions graduate courses that offer extraordinary experiences in 15 countries throughout the world. New in 2016 are courses in Galápagos and Paraguay. http://EarthExpeditions.MiamiOH.edu/15-16_news

Earth Expeditions can build toward the Global Field Program (GFP), a master's degree that combines summer field courses worldwide with web learning communities so that students can complete the GFP master's part-time from anywhere in the United States or abroad. http://GFP.MiamiOH.edu/15-16_news

Project Dragonfly also offers graduate courses and the Advanced Inquiry Program (AIP) master's degree co-delivered by premier learning institutions in Cincinnati, Chicago, Cleveland, Denver, New York, Phoenix, San Diego and Seattle. The AIP master's takes place on-site and near AIP Master Institutions and through web-based learning communities. http://AIP.MiamiOH.edu/15-16_news

Graduate tuition for all programs is greatly reduced because of support from Miami University.

Spencer Pate
Project Dragonfly, Miami University
Oxford, Ohio 45056
(513) 529-8573, patesc@miamioh.edu
http://EarthExpeditions.MiamiOH.edu/15-16_news

Free Online Science Resources

Free online classroom resources are being reviewed and provided to teachers by the NGSS@NSTA Curators. Check out the resources at http://ngss.nsta.org/Classroom-Resources.aspx. The lessons are grouped by discipline – physical, life, Earth-Space, and Engineering. Grade level spans are included. The review contains a link to the reviewed website as well as a detailed description of the lesson. Alignment with all aspects of the Next Generation Science Standards is described with suggestions for increasing the connections to the Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts. The website is still in its infancy and new resources are being added continually. Bookmark the site and check back often to find new ideas for your classroom!

The curators are a group of 55 science educators from across the US, including South Dakota's own Ramona Lundberg, National Board Certified high school science teacher in the Deuel School District and Janet Briggs, Science Education Specialist at Black Hills State University.

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Ramona.Lundberg@k12.sd.us

SD-AAPT High School Physics Photo Contest

The contest is open to high school students in grades 9-12 (or equivalent international grade level). **Students must print out, sign, and return the Contest Rules and Entry Agreement when submitting their entry. Failure to submit this form will invalidate the contest entry.** Entries are limited to 6 per teacher per school each year. If possible, please place all entries from the school in one package.

Photos may be in one of two categories: Natural or Contrived; and will be judged on the quality of the photo and the accuracy of the physics in the explanation that accompanies the photograph.

The SDSTA Newsletter is published four times a year. The October issue (this one) is e-mailed to 130 paid members, and several school science departments.

The Membership year in SDSTA starts with the February conference and ends the first of February. Dues are due at each conference for member discount rates.

SDSTA members may give a one year free membership to their student teachers by submitting the student teacher's name & address.

One paid conference registration may be given to the SDSTA member that has made a submission to the newsletter (or given a presentation at the conference) and has referred at least three new members.

Members may also earn a 10% finders fee for any science related ads placed in the newsletter. Our rates are $50 per page (or 3 to 4 quarter pages).

Prizes
SD-AAPT will award cash prizes & certificates. (Usually given to the top three places only.)

Judging
The photos entered will be displayed and judged during the annual Winter Meeting at the Joint Science & Math Conference in Huron in February. If more than 100 entries are received, a group of volunteer physics teachers will determine the 100 best entries to be displayed & judged in Huron. Failure to abide by all rules will result in disqualification.

Deadline
This year's entry deadline is January 15.

Submissions
Send submissions to:
James Stearns
15 North Fifth Street
Groton, SD 57445-2024
James@SDSTA.org

Mail to: Deirdre Peck, SDSTA Treas
409 S. Kline Street
Aberdeen, SD 57401

$ 5 Student
$ 5 K - 6
$ 5 Retired
$ 20 All Others

Name _____ Home Phone ____-_____
Home Address _____ E-mail: _____
City _____ State _____ Zip _____

Your School _____ School Phone ____-_____
School Address _____
City _____ State _____ Zip _____

Your area K - 6 7 - 8 9 - 12 College Other_____
(circle one)
Referred by_____