

Technology in Action Guide

Elementary Science



Sample Standards Connections

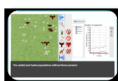
When implementing technology into lessons and units, educators can connect to the content standards of the immediate subject, such as science, quickly. Connecting the tools within this document to the core disciplines of Life Science, Physical Science, Earth and Space, or Engineering can be the first step of Standards Connections. Taking a few steps further educators need to connect with standards outside of science. Here are a few that might be include with the tools here:

ELA *R.7* Integration of Knowledge and Ideas, *R.10*– Range of Reading and Level of Text Complexity, *L.6*–Vocabulary Acquisition and Use, *W.1-W.3*–Text Types and Purpose, *W.4-W.6*– Production and Distribution of Writing, *W.7-W.9*– Research to Build and Present Knowledge, *W.10*– Range of Writing, *SL.1-SL.3*– Comprehension and Collaboration

SEL—*Goal 1*– Self Awareness and *Goal 2*– Social Awareness/ Interpersonal Skills



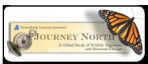
Online Experiments/ Simulations



Experiment with Ecosystems (The Concord Consortium)
The goal of this activity is to give students the opportunity to “think like a scientist,” making hypotheses, doing experiments, making observations, and analyzing data. Students are encouraged to construct and conduct their own experiments with ecosystems comprised of grass, rabbits, and up to two predator species: hawks and foxes. <http://bit.ly/2Inf9Hb> **LIFE SCIENCE**



Molecular Workbench (The Concord Consortium) - The complete workbench is a downloadable program that can be modified by the educator and then the students can control the experiments more. However, there is now a selection of “online” HTML 5 experiments and simulations that can be utilized completely online and are Chromebook compatible. This is the link to those resources. (You can also link to the downloadable program and all of the resources available from this webpage on your class website.) <http://bit.ly/2lrxTcM> **PHYSICAL SCIENCE**



Journey North Class Study - This platform is a free, Internet-based program that explores the interrelated aspects of seasonal change. Through interrelated investigations, students discover that sunlight drives all living systems and they learn about the dynamic ecosystem that surrounds and connects them.

- Sunlight and the Seasons*: Children study seasonal change in sunlight in a global game of hide and seek called Mystery Class.
- Plants and the Seasons*: Children explore tulip growth in their own gardens, running an experiment that tracks the arrival of spring.
- Seasonal Migrations*: Children follow animal migrations. They observe, research, and report findings and watch journeys progress on live maps. <https://www.learner.org/jnorth/> **EARTH AND SPACE**



Algodoo is a unique 2D-simulation software from Algorix Simulation AB. Explore physics, build inventions, design games or experiment with Algodoo in science classes. With Algodoo students can create simulation scenes using simple drawing tools like boxes, circles, polygons, gears, brushes, planes, ropes and chains. Students can also add more physics in their simulation like fluids, springs, hinges, motors, thrusters, light rays, tracers, optics and lenses. (iPAD as well.) <http://www.algodoo.com/> **ENGINEERING**



Lunar Phase Simulator— The NAAP Lunar Phases lab demonstrates how the Earth-sun-moon geometry gives rise to the phases of the moon as seen from earth.

A distant view of an observer looking down on earth as well as a perspective of an observer looking into the sky are used in the simulator. (Astronomy Education at the University of Nebraska-Lincoln) <http://bit.ly/2m36iSo> **EARTH AND SPACE**



PBS Zoom Goldburger— A website simulation modeled after Rube Goldberg where the ZOOMers were challenged to design a machine that serves lunch to the ZOOM cast and crew. They've called it the Goldburger To Go, and they need your help to finish it. The website also has other resources on Rube Goldberg designs that students can investigate.

<http://to.pbs.org/2lMZlPh> **ENGINEERING**



Science Videos



Crash Course Kids! is a channel created by PBS Learning Media for elementary students with 105 science videos ranging from 4 minutes to 20 minutes in length. The topics covered match standards for 4th-5th grade, but are great for all elementary students and even a review for 6th grade science concepts.

<https://www.youtube.com/user/crashcoursekids>



SciShow Kids is a YouTube Channel that explores all those curious topics that make people ask “why?” Jessi and her robot rat, Squeaks, answer questions and explain fun, complex science concepts for young, curious minds. Whether conducting experiments, researching new questions, or talking with experts, there's always something new to discover with SciShow Kids, no matter what age the students are! <https://www.youtube.com/user/>



Safe Share TV is a platform to watch YouTube without any additional videos or advertisements appearing on the screen. By copying and pasting the YouTube link into the box on the home page, the website will generate a new LINK to the video. This link will never expire and now will direct to a video display that removes all the unwanted items. Educators can now place this link in a PowerPoint or an assignment in GAFE (Google Apps For Education) that the students can select and they will not be shown “other” items. <http://safeshare.tv/>

Research / Data Tools



Ducksters is a simple, K-5 student-friendly database option that includes history, science, geography, economics sports and fun facts. Resource pages are detailed but to the point making it easier for some students to maintain attention and not get frustrated with too much "text". Links to some educational games are on the website as well, so monitoring is essential. <http://www.ducksters.com/>



Kiddle is a visual search engine that returns SAFE results. Sites appearing in Kiddle search results satisfy family friendly requirements, as they filter sites with explicit or deceptive content. The search result will include 1-3 sites that are hand picked by the editors that are written just for kids, 4-7 sites that are simple and easy to read, and 8 or more that have expert content but may be harder to read. All results include a large thumbnail or graphic beside the text. <http://kiddle.co/>



Create A Graph— Kidzone online graphing tool. Extremely kid friendly for elementary students to graph data online. Includes a tutorial to get started if students are new to graphing. Students can take data from any experiment or polling situation and create a visual representation of the information much easier than a spreadsheet creation. <http://bit.ly/1OxeRx6>



Presentation and Publication Resources



Screencast-o-matic allows users to record on-screen activity and audio from a computer microphone. Students can open their MS Word or Google Doc essay or report and record their reflections or process on how they developed their hypothesis or experiment. The video can then be saved and uploaded to the class website. The same process could be done for any computer generated work, modeling how to research or conduct a search online, or doing a science experiment with an interactive model and explaining why the reactions are occurring. <https://screencast-o-matic.com/home>



ThingLink creates an interactive digital graphic by adding "dots" that pop up text or connections to websites, videos or more graphics. Users can upload photos, documents or any graphic and then add points anywhere on the item to show items of interest or further exploration. Students connecting to a science model may have linkable items to the research they have based their data or maybe an interactive experiment proving their hypothesis. <https://www.thinglink.com/edu>



The iOS and Android standard camera app can allow video recording. Students can either record themselves holding up their work and reflecting or hold the device while pointing to the work and record their reflections. The file can be transferred from the device either via cable or WiFi. Students could record their work with a partner or group as well.



Show Me app is a recordable white board where students can draw or write on the board while explaining their work. This a great way to show student mastery with student created math tutorials. Educators can upload images that students can write, show or reflect on. <http://apple.co/2eZ1fg>



Block Posters is a website to create posters from any picture file that can be printed on a standard printer. The website platform allows the user to upload any picture file and converts it to a PDF that is made of multiple pages that can be assembled to create a large poster. Users have control of the final size of the poster prior to the conversion and instructions are saved with the created PDF. <http://www.blockposters.com/>

Website HIGHLIGHTS



The Concord Consortium's Path Finder - Their STEM Resource Finder features some of the best free, open-source educational activities, models and software tools. Educators can search by keyword or filter by subject, grade level and type to find the right resources for learning goals. ****Educators will need to carefully consider where to include these resources in their curriculum to ensure they are aligned properly to their grade level standards.** <http://concord.org/ngss/>



Virtual Biology Lab has three Biodiversity Ecology Labs for students to explore how changes can effect the habitats. There is an Island, Stream and Plant model to manipulate. No login is required, the graphics are great and work well with a projector. <http://virtualbiologylab.org/biodiversity-ecology/>



StemRead is from Northern Illinois University (NIU). Carefully selected books rooted in science, technology, engineering, and math (STEM) topics that explore the science behind the fiction. A selection of activities to go along with each one, lesson plans and videos to support the books. Since the creators of this platform are in Illinois, they also offer PD opportunities and local contacts. Checkout their contact information and signup for their email list. <http://www.stemread.com/>



The Lawrence Hall of Science 24/7 Science is a website that has many STEM resources. In these interactives, use your hands, feet, eyes, ears, brain, imagination and cool tools to experiment, design, test and discover amazing things about the world around you. It's science and it's fun! <http://static.lawrencehalloffscience.org/kidsite/>



Even MORE Resources

To find more resources and the latest up-to-date technology to support technology integration, please visit www.ilclassroomtech.weebly.com.

- ◆ Assessment tools
- ◆ Audio/video tools
- ◆ Content area support
- ◆ Digital portfolios
- ◆ Computer science
- ◆ Learning management systems
- ◆ Mobile apps
- ◆ Research tools
- ◆ Social Emotional Learning
- ◆ Technology terms

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