Elementary Science Resource Kit

Integrating Creative Technology Tools into Your Science Program
Creative work with technology tools, like Pixie and Wixie, can help you get primary students to embrace the inquiry process while developing essential skills for future science learning. Simple activities you do together can teach and assess student understanding of the five senses, animal classification, and life cycles, helping you address specific standards from kindergarten to second grade. You can further develop learners’ observation, problem-solving, and critical thinking skills with student-created projects that incorporate painting, diagramming, writing, storytelling, narration, and more.

Assess for Understanding
Building strong foundational knowledge about science is crucial. Sorting activities can help you assess student understanding on a topic. For example, after teaching students about the differences between living and nonliving things, have students classify objects to evaluate comprehension. If you have an interactive whiteboard, ask individual students to drag a sticker to classify an item, prompt them to explain the decision, and then discuss with the rest of the class.

Take a more creative approach to evaluate comprehension by asking students to tell stories that show what they know about the topics they are learning. For example, after learning about the pond habitat, have students write and illustrate a one-page story that includes animals and plants found in ponds. Combine each student’s page into a class book you can share in the school library and with parents at home.

Record Classroom Observations
One of the most important skills young students need to learn is scientific observation, the foundation of the scientific method and the reason students learn about the five senses so early. It is important for young scientists to learn that observing plants and animals helps them draw conclusions. After learning about the seasons, have students write a five senses poem about one of the seasons or paint what a tree looks like during each season.

If you are studying weather, have students look outside to observe the weather each day. Have students describe the daily weather using pictures and weather vocabulary. Use a classroom computer or an interactive whiteboard to chart the weather for one week or even a month.

Comparing and Classifying
Students can apply their observation skills by comparing and classifying. Give students...
multiple objects and then ask them to use their five senses to identify how they are different and how they are alike and then sort them into groups. Then ask them to group them together and share the “rules” they used to sort. Identifying similarities and differences is one of the nine instructional strategies found to improve student achievement in Robert Marzano, Debra Pickering, and Jane Pollock’s Classroom Instruction that Works.

Another fun way to have students write and create to identify similarities and differences is through the creation of an **If… But Report**. For example, students can compare different types of animals or weather by writing sentences that begin with “If I were” to describe the first object, followed by “But I would not” to describe the second topic.

### Getting Started with Inquiry

If your students grow bean plants to learn about the life cycle of a plant and the requirements for plant growth, ask them to keep a science journal with text and pictures. After they record their observations, create a printed journal or online life cycle site. Consider having individual students capture their observations at a seed center in your classroom and combine their reflections to create a class journal.

As students write about their observations, work with them to ask questions about what is happening and what they think will happen next. This will help them begin to use observations as the basis for scientific inquiry. The scientific process isn’t about finding the answer to someone else’s questions, but learning to ask questions and develop ways they can experiment to find an answer. Start with a simple inquiry process that leads them to ask a question, make a guess (hypothesis), determine how they can test, and draw conclusions.

### Put Students in the Driver’s Seat

Constructing their own models and diagrams requires higher-order thinking skills and helps students organize information. This type of project work also helps you assess their comprehension. For example, after studying the water cycle, have students paint the cycle. The paintings make a great final assessment because the activity does not provide hints or clues. Students can’t guess using content and terms you have provided and must have a thorough understanding of the water cycle to complete this activity.

Students love to be part of the action. Asking them to become an animal they are studying is motivating and a great way to help them practice scientific observation and writing in the first person.

First, capture students’ faces using a web cam. Next, provide a few photographs of animals they can use for reference as they draw accurate body parts around their faces to transform themselves into animals. Once the drawing is complete, have students write a story about their life as this animal, including details to demonstrate knowledge of the animals’ features and habitats.

Painting images, diagramming cycles, and creating stories gives students agency in their learning and fosters the development of important knowledge and skills to support future science learning.

Find more science lesson ideas in the Creative Educator lesson library.
http://creativeeducator.tech4learning.com

### Biography

**Melinda Kolk** has been helping educators implement project-based learning and creative technologies into classroom teaching and learning for the past 15 years.
Clay animation is a motivating process you can use to engage students as they explore and grapple with complex scientific topics. Science education is designed to provide students with the skills to become independent inquirers about the natural world. The National Academy of Science encourages teachers to use collaboration as a tool so that students participate in the sharing of data and development of group reports. They also suggest that students should be given opportunities to make presentations of their work and “engage with their classmates in explaining, clarifying, and justifying what they have learned.” Clay animation is perfect for supporting this learning environment!

**Make Science Processes Tangible**
First of all, clay animation helps make many science processes and concepts tangible. In What Works in Classroom Instruction, Marzano explains that humans store knowledge in linguistic and visual form. For concepts that are hard to explain in writing, creating non-linguistic representations with clay animations can help students explore and remember information. Because science topics range from very small things like atomic particles to very large structures like the solar system, it is difficult to explore many concepts in a tangible way. Clay animation allows for hands-on manipulation and the creation of physical models, helping students analyze scientific structures and processes like cell division and plate tectonics.

**Improve Thinking Skills**
While students are motivated by creating their final animation products, it is the process of making clay animation, including writing, brainstorming, planning, sequencing, team work, and management, where the real learning takes place. As they plan their clay animation to demonstrate a science process, such as plant growth, students must use logical thinking skills to sequence the steps. Critical thinking skills are required to analyze the process and determine what factors are necessary for each step in the process and movement from one step to the next. As students create the clay animation, they must evaluate the information and work together to determine the most effective way to demonstrate the concept or process they are animating.

Collaboration is a necessary component of successful classroom clay animation. Consider, for example a project on cell division. If each team attempts to animate the entire process of cell division, due to time constraints, the resulting animations might not include all of the essential information and details. On the other hand, if each team were to animate one phase in the process, the entire class could combine their animations into one presentation. The whole class will still need to look at the entire process to determine what colors and shapes to use. This ensures that models display cell structures like the nucleus and cell walls consistently throughout the animation. Each team would also have to work with the team before it and after it to ensure that no part of the cell division process was missed.

Students at Bauer Elementary in Hudsonville, Michigan create a clay animation as the culminating assessment of a unit on plant and animal life cycles.
The students choose which life cycle they want to work on, and form groups to make clay animations to demonstrate their understanding. Teacher Julie Myrmel shares, “Not only do they delve deeper into the progression of the life cycles, they get to showcase their artistic side, learn how to compromise as a member of a group, and work on a project they really care about. The element of fun, and the strong sense of ownership of the project, brings out the best in them.”

Engaging ALL Learners
Engaging the intelligences of all students in a classroom is part of what makes clay animation so motivating. Students have seen clay animations on television, and even though they are using animations to represent concepts in science, this makes the project more relevant to their lives. Creating an animation that will be viewed by other students in their class, students in other classes if they are shown at a school assembly, or students around the world if they are shared online, reinforces that the work our students are doing in the classroom is valuable and important.

Julie Myrmel also loves how clay animation engages all of the learners in her classroom:

“One of my favorite parts of working with these projects is that the kids who are often the leaders are the same ones that struggle with more traditional class work. So, instead of being the one who has to HAVE help, they are the experts the other kids go to, and they’re the ones GIVING the help. The look on their faces as they’re sought out as pros by their peers is priceless.”

Anne Truger, of Lake County, Illinois, works with students who have behavioral and learning issues. She can’t reach her students without projects that are motivating. When using clay animation, she found that her students were “more engaged...than I had seen all year. Students gave up study halls, lunch, and even came in early to work on the projects!”

This visual approach to learning also supports the multiple intelligences students use to learn in the classroom. Clay animation provides an opportunity to reach the variety of learners in your class. The parts of a clay animation production help all learners strengthen the different intelligences as they complete their project. Making a clay character engages the bodily-kinesthetic intelligence; writing the story or script engages the linguistic intelligence. Working in a team engages the interpersonal intelligence. Creating an animated production engages the spatial intelligence, and organizing and sequencing the frames and tasks engages the logical-mathematical intelligence.

Assessing for Understanding
The process of creating a clay animation also provides multiple opportunities for assessing understanding. With many traditional forms of assessment, students can recall enough rote information to guess a multiple choice question correctly or parrot back an exact definition without understanding what it means. Creating a clay animation provides many opportunities for you to assess for understanding. Lania Ho, of Barrington, Illinois, asked her students to create clay animations that demonstrated
a real-life situation to explain physics concepts they were learning. When students used a martial arts fight to demonstrate Newton’s Third Law of Motion – every action has an equal and opposite reaction - the questioning and planning during the process provided an opportunity to ask questions and identify misconceptions. In this instance, making sure that the students understood that while the action, one character hitting another, was obvious, the reaction was not the other character falling down.

Jean Trusedell, of Decatur, Indiana, used clay animation for a germ unit. Her students created animations that showed how viruses and bacteria attack our cells, how medicine might affect the germ and kill it, and how the cells could be protected. While building the animation, they had to discuss their ideas with their teammates as well as explain their ideas to her. “The greatest part of using clay animation is that the kids are always having to explain the process as they go, and I can constantly assess their progress. Asking them to visualize the cellular level is always difficult; the clay animation process helped make that possible,” she shares.

Making the Investment Worthwhile

The process of clay animation involves a significant time investment. Although there are ways to simplify projects and the process, you would not want to use clay animation to teach every topic in your science curriculum. You can ensure that the time investment is worthwhile by choosing your topics carefully and structuring the process to meet your classroom needs. Using clay animation to explore a difficult topic helps provide multiple opportunities to catch misconceptions, while providing students many opportunities to analyze content. If student teams create animations on many different topics at the end of the unit, sharing the finished animations is a great way to revisit concepts at the end of a unit and review for an upcoming assessment.

Remember, the learning during a clay animation project occurs during the process. Sandra Smits, of Hudsonville, Michigan, explains, “When they were done with the project, they really had a strong understanding of the life cycle because they spent so much time planning it out and talking about the steps involved to make it all work.” The visual format and popular medium appeal to students who might not otherwise engage in the content or be willing to struggle through difficult concepts. Clay animation projects require students to think, not simply recall facts and information. Jean Trusedell sums this up nicely: “Clay animation requires my students to delve deeper into their higher level thinking skills. Rather than learning that is rote, clay animation requires my students to synthesize the facts and turn that knowledge into a new understanding and THEN demonstrate their new understandings to others.”

References


Biography

Melinda Kolk is the author of Teaching with Clay Animation and has been helping educators integrate successful clay animation projects in their classrooms for over eight years.
A storyboard is a combination of outlines and visual sketches that map out the contents and direction of your story. Use this storyboard to show what will happen in each scene of your animation. A scene can be made up of multiple frames.
A rubric can help you assess the final project as well as the process along the way. Before students begin, share your expectations for completed projects, as well as explain the work to be performed during the project-building process.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Novice</th>
<th>Apprentice</th>
<th>Proficient</th>
<th>Distinguished</th>
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<tbody>
<tr>
<td><strong>Project meets its purpose and skillfully answers the question posed.</strong></td>
<td>Subject knowledge is not evident. Information is confusing. Does not answer the essential question.</td>
<td>Some subject knowledge is evident. Some information is confusing. Question is stated but not clearly answered.</td>
<td>Subject knowledge is evident in much of the product. Information is clear, appropriate, and correct. Essential question is answered.</td>
<td>Project has gone above and beyond. All information is clear, appropriate and correct. Essential question is clearly answered. Subject knowledge is evident throughout.</td>
</tr>
<tr>
<td><strong>Quality of Design.</strong></td>
<td>Quality is weak. There is no evidence of logical flow or use of new ideas. No visual impact.</td>
<td>Random presentation of material with little attention paid to quality.</td>
<td>Media used demonstrates adequate and clear sequencing of material using creative graphics.</td>
<td>Media shows superior evidence of continuity. There is a logical intuitive sequence of information.</td>
</tr>
<tr>
<td><strong>Storyboarding and planning</strong></td>
<td>Did not utilize storyboard during process or storyboard is incomplete.</td>
<td>Basic storyboard. Does not answer essential question. Referred to storyboard during project building process.</td>
<td>Strong storyboard that answers the essential question. Storyboard used as a guideline for project development.</td>
<td>Fully developed storyboard that answers the question and is organized in coherent pieces. Used storyboard extensively during project development for goal-setting, organization</td>
</tr>
<tr>
<td><strong>Presentation style including, eye contact, voice, and appearance</strong></td>
<td>No eye contact. Low, soft, or monotone voice. Script reading. Appearance is too casual or sloppy. Posture is slouched.</td>
<td>Some eye contact. Voice is soft or monotone. Appearance is casual, but neat. Presenter rocks back and forth.</td>
<td>Some eye contact, but only in one direction. Voice is steady and clear. Presenter shows some facial expression, uses appropriate gestures, and knows the content well. Presenter is dressed up and has good posture.</td>
<td>Eye contact moves among the audience. Presenter is confident, expressive, and know their content. They are dressed up or in appropriate costume. They have good posture, are mobile, and use facial expressions and gestures to make their point.</td>
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Identifiers

Grade Level
2–3

Subject
Language Arts and Science

Duration
2 class periods

Objective
Students will write riddles as they learn about animals.

Description
Students will research an animal and create a riddle to showcase their knowledge and engage other students in the natural world.

Application
Pixie™ and Wixie™

Process

Authentic Task
Kids love jokes and riddles! Your class will create a series of riddles that other students can use to learn about animals.

Engage
In this lesson, students will complete research about an animal and demonstrate their knowledge about the animal by creating riddles in Pixie.

Introduce your students to animal riddles by reading ABC Animal Riddles (rhyming verse) by Susan Joyce or If Not for the Cat (haiku) by Jack Prelutsky.

These books will engage your students in the process and demonstrate various ways that riddles can be written.

Discuss the riddles you have read with your students: You might ask:
• What was your favorite riddle? Why?
• What clues helped you figure out the answer?
• What types of words did the author use?
• What makes a good riddle?

As a class, explore the steps at the Read, Write, Think website for Riddle Writing which includes great ideas for finding descriptive words, using a thesaurus, and writing in perspective.

Let your students know that they will be creating their own animal riddles. Each student will choose an animal and create two pages in Pixie for the riddle.

Page 1 will be the riddle. An example might look like this:

I have beautiful black spots. I am a carnivore. I live on the savanna. I am the fastest land animal on the planet.

Page 2 will be an illustration of the animal.

Brainstorm a list of different animals with the entire class. Depending on your current science focus, you may want to narrow your brainstorm to types of animals, such as mammals, or animals that live in a particular habitat like the desert.

Students should choose one animal from the list and write down what they already know about the animal using a cluster map or other graphic organizer.

In order to formulate the riddle, students will write clues based on the following questions:
• What does this animal look like?
• Where does it live?
• What does it eat?
• What makes it unique?

Give students time in the library or online to research the answers to these questions. Students should add their research notes to their existing cluster organizer.

Create
When their research is complete, students should write a draft of the riddle. The riddle should contain four sentences:
• Sentence 1: how the animal looks
• Sentence 2: what the animal eats
• Sentence 3: where the animal can be found
• Sentence 4: a unique fact or distinguishing characteristic

Students should work in Pixie to create their riddle pages. Use the Text tool to add the text of the riddle to page 1 and use the Options panel to adjust the size and font. Use the paint tools to illustrate the animal.

If they have time, students can record their voice reading the riddle on page 1 and add illustrations or images that support the words in the riddle.

Students can print their two–page Pixie project as a table tent or greeting card. You can also collect all students’ files into one folder, combine them into one file in Pixie with each riddle followed by its illustrated answer, and export the project as HTML or a movie.
Steps for Students

Create an Animal Riddle in Pixie®

Students can use Pixie to create an animal riddle.

1. Open Pixie.
2. Click the New button on the toolbar to create a second page.
3. Click the Text button to add text to page 1.
4. Use the Options panel to modify text.
5. Use the Paint tools to illustrate page 2.
6. If you choose to use clip art, click on the Stickers tab to locate images for your animal.
7. To use an image downloaded from the Internet, click on the Stickers tab, click the Browse for a file button, navigate to the image, and click the Open button.
8. Click the Save button for both Pixie pages.
9. Click the Print button to print the project pages.

Steps for Teachers

Combine your student work into one file.

1. Gather all student pages into one folder.
2. Open Pixie.
3. Click the Project button and select Import Pages.
4. Navigate and select the Animal Riddle of choice.
5. Repeat these steps until all projects have been imported.
6. Once all pages have been imported, click the Project button and select Export.
7. Choose Movie to make a video of the riddles.
8. Choose HTML to make an online storybook of the riddles.

Share

Celebrate and present the student riddles! If students print table tents or greeting cards, have them place the printed projects on their desks and encourage students move around the room to read and guess at other students' riddles. If you choose to create a whole-class HTML file, project the exported riddles in front of the class and have each student read their riddle and facilitate class discussion and guesses. You might even want your class to share this with another class.

Assessment

In the beginning stages, the cluster map organizer can be used to assess each student's prior knowledge. You can continue to monitor progress as students complete and add their research notes and write their riddles. As students begin illustrating, prompt them with questions about their animals to encourage them to add more details and create more complete and specific illustrations.

Resources

Joyce, Susan. *ABC Animal Riddles*
ISBN: 0939217511

Yolen, Jane. *Least Things: Poems About Small Creatures*
ISBN: 1590780981

Prelutsky, Jack. *If Not for the Cat*
ISBN: 0060596775

Animal Planet
http://animal.discovery.com/

Fact Monster

Riddle Writing
http://bit.ly/ak03NM

Standards

NSE-S-National Science Education Standards

CONTENT STANDARD C:

As a result of activities in grades K-4, all students should develop understanding of:

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

Common Core Anchor Standards for English Language Arts - Grade K-5

Reading Theme

Key Ideas and Details
1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Writing Theme

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Research to Build Present Knowledge
7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Speaking and Listening Theme

Comprehension and Collaboration
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas
4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

NETS for Students:

1. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
Visit Our Solar System

Identifiers

Grade Level
4-5

Subject
Language Arts, Science

Duration
1 week

Objective
Students will learn about the planets through the eyes of the first students allowed to travel in space.

Description
Students will learn about the planets as they create a sample travel journal that explains what it would be like to visit one of the planets.

Application
Pixie™, Wixie™, and Share®

Process

Authentic Task
Space Tours Unlimited would like to begin offering tours to the planets. They have trained astronauts who can take people on tours of a planet aboard the Cosmos2020, the most advanced shuttle to ever launch into space. To generate business, they have asked your class to help them create an interactive presentation that will help new customers choose which planet they want to visit.

Engage
Step 1: Introduction
Complete a KWL chart with your students to activate their prior knowledge about the planets. You might want to read various books or plays about space, such as The Magic School Bus Visits the Solar System, to get students interested in the topic. Show your students different images of planets (you can find planet images in Pics4Learning). Discuss basic facts about each one.

Step 2: Online Research
Tell the students that they have been chosen to create an interactive brochure for a visit to one of the planets. On this space tour, the students will have to answer the following questions about their planet:

1. What is the planet's distance from the sun?
2. What is the diameter of the planet?
3. Does the planet have any moons? If so, name them.
4. What is the atmosphere like on this planet?
5. Are there any unusual features about this planet?

Have students use library books and online resources to find answers to these questions. There are several online resources listed in the Resources area.

Create
Step 3: Project Work
Once the students have completed the Planet Worksheet, they are ready to begin creating their Planetary Tour as seen through the eyes of the first tourists in space. Students will use Share to present their tour and describe the things that tourists would see during a visit to this planet. Students can use their research to help them choose information for their project and a storyboard to help them organize their ideas.

Share
Step 4: Present the Project
Have students present their planetary tour to the rest of the class or at a school assembly. This will help everyone learn more about the planets. You may even want to have students vote for their favorite tour.

You could also turn this into a community event by making it a travel trade show. Have each student share their tour at a planet station. Audience members can watch each tour to get an idea of which planet they would like to visit. You could also issue tickets for each tour so students and community members can choose which planet they would like to visit.

Assessment
Assess your students’ prior knowledge about the solar system as you work together to complete a KWL chart. You could ask them what
Steps for Students
Creating an Interactive Tour in Share™

You can use Share to create an interactive presentation with text, pictures, sounds, movies, music, and more.

1. Launch Share.
2. You will see a blank first page.
3. Go to the Options panel and choose a new color for your background.
4. On the Tool Palette click the Text Object. You will see the text options. Choose options for your text box.
5. Click inside the box and type a title for your tour.
6. Go to the Library tab and choose Clip Art or images from Pics4Learning to add to your page.
7. Click and drag the graphic to position it on your page. Click and drag the handles around the image to resize it.
8. Go to the Tool Palette and choose New Page. Repeat the steps above to add text and graphics to each page.
9. To add a link to another page, go to the Library tab and open the Buttons folder.
10. Continue adding, designing, and linking pages until your tour is complete.
11. Go to the File menu and choose Save As. Use the Save in/Where pulldown menu to choose a place to save the file, type a name in the File Name/Save as field, and click the Save button.
12. Click the Publish button on the Tool Palette, choose HTML. Use the Save in/Where pull-down menu to choose a place to save the web page, give the file a name in the File Name/Save as field, and click the Save button.

They know about each planet, the sun, and the moon individually to elicit more detail. Their answers will give you insight into their current comprehension. For example, a student might share that Mercury is very hot. You might respond with a question asking what they know about the temperature on Neptune. This will help lead into understanding that the distance from the sun is a factor influencing the environment on each planet.

Student answers to research questions about the planets can give you insight into comprehension, but may also simply be an indication of a student’s ability to conduct online and print research. Engaging students in discussion about the information they have found will help you catch misconceptions and better assess understanding before project work begins.

Engage students by asking lots of questions as they are working on their itinerary and tour. You can assess their Share project for accuracy of facts and their comprehension of what impact distance from the sun, atmosphere, and other planetary features would have on the humans visiting the planet.

A Virtual Journey to the Universe http://library.thinkquest.org/28327/

Standards

NSTA-National Science Education Content Standards

Content Standard D:
As a result of their activities in grades 5-8, all students should develop an understanding of:
- Structure of the earth system
- Earth’s history
- Earth in the solar system

Common Core Anchor Standards for English Language Arts - Grade 4-5

Writing Standards

Text Types and Purposes
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge
7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

NETS 3-5 Performance Standards:
1. Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively. (1)
4. Use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum. (3)

Resources


Nasa-Welcome to the Planets http://pds.jpl.nasa.gov/planets/welcome.htm
Inventions. Depending on the age of your students, you may want to share this unique video about life without basic inventions: [http://www.videojug.com/film/how-to-live-without-basic-inventions](http://www.videojug.com/film/how-to-live-without-basic-inventions).

Let your students know that they will create Web sites that celebrate common inventions and some not-so-common inventors.

Assign an inventor to each student, or let the students choose an inventor they wish to research.

For example:
- **American Inventors**
  - Jonas Salk
  - Isaac Merritt Singer
  - Thomas Edison
  - Alexander Graham Bell
  - Samuel Morse
  - Jerome Lemelson
- **African American Inventors**
  - George Washington Carver
  - Elijah McCoy
  - Lewis Latimer
  - George Crum
  - Charles Drew
  - Philip Downing
  - Garrett Augustus Morgan
- **Women Inventors**
  - Ruth Walkfield
  - Mary Andersen
  - Virginia Apgar
  - Josephine Gares
  - Bessie Nesmith

Have students research basic who, what, when, where, and how information about their inventors. Their research should also help them describe the historical, social, economic, and scientific impacts of the inventions. To help students better understand events that help shaped each inventor's perspective, have each student create a timeline of significant events in their inventor's life.

This process is designed to generate curiosity in your students about the origin and inventors of products they use every day. You may want to read E. L. Konigsburg's *Samuel Todd's Book of Science* to guide your students in understanding the value of scientific thinking as they learn about inventions and practice research and writing skills to create a Web site about an inventor.

Let students know that they will transform their research into a Web site about the inventor. You may want to give students guidance on what information to include in their Web sites.
Steps for Students

Make a Web Site in Share

Students can use Share to create a Web site with text and original artwork.

1. Open Share.
2. Click the Text tool on the tool palette to add text.
3. Double-click the box to add text.
4. Click the Library tab and Browse for a file to locate an image of your invention or inventor saved on your computer.
5. Click the New Page button on the toolbar to add more pages to your site.
6. Click the Library tab. Double-click the Buttons folder to add navigation to your site.
7. Click the Save button on the toolbar. Choose where you want to save your file and click the Save button.
8. Click the Show button on the toolbar to test the navigation on your site.
9. Click the Publish button on the toolbar and select HTML. Choose where you want to publish your site and click the Save button.

they should include on each page of their project, such as:

Page 1: Title
Page 2: About the Inventor
Page 3: About the Invention
Page 4: A Description of Life Without the Invention
Page 5: A Description of How This Invention Impacted History

Share

Upload all of the sites to the same location and create a menu page that links to each inventor site. You may also want to place this resource in a school media center or advertise some fun facts students learned on your school's news program or audio announcements. Ask each student to share the highlights from their research with the rest of the class. Ask students to share both basic information and how they think the inventions changed society and impacted history.

Assessment

As you brainstorm life without inventions, you can assess students’ prior knowledge. You will be able to evaluate their note-taking, summarizing, and information literacy skills as they research information for their sites.

Their site and oral presentation will also help you assess their understanding of the impact of each inventor's invention.

Resources


Zoom Inventors and Inventions
http://www.zoomschool.com/inventors/

About.com: Famous Inventors

Standards

Common Core Anchor Standards for English Language Arts - Grade 5-12

Writing Standards

Text Types and Purposes
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Research to Build and Present Knowledge
7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Speaking and Listening Standards

Presentation of Knowledge and Ideas
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

NCSS—Time, Continuity, and Change
Students compare and contrast different stories of accounts about past events, people, places, or situations, identifying how they contribute to our understanding of the past.

NETS for Students
1. Creativity and Innovation
2. Communication and Collaboration
3. Research and Information Fluency
Students should now write a first draft of the essay, trying to get all their ideas down in logical order. When the first draft is finished, have them print and edit their work, making changes to improve the essay. This would be a great time to have students review one another’s work.

Share examples of public service announcements you find on television or online.

- Which ones do the students like? Why?
- Which ones make the most compelling arguments? Why?

Most public service announcements are between 10 and 60 seconds long. Ask students how much of their essay they can read in ten seconds. How are they going to need to think differently to make their argument in a PSA? Work as a class to brainstorm nonverbal strategies for making a compelling PSA.

Create
Let students know they will be working on a team with other students exploring their issue to create a 30-second public service announcement. Group the students together and have them begin their work by reading their arguments to the rest of their team members.

Working as a team, ask students to identify the best arguments in each essay and brainstorm how they could share those ideas in a short PSA. Have them list the stories, facts, and ideas they think will be helpful in making an argument in their public service announcement.

Have each team complete a vision for their project to define their argument, identify their audience, refine their goal, and choose an idea to pursue. Each team should then refine their vision and begin developing a storyboard to serve as the map for the PSA design.
Steps for Students

Creating PSAs in Frames™

Students begin building their PSA by gathering the media resources needed. They may want to use a digital camera or Pics4Learning to gather images for their PSAs.

1. Launch Frames.
2. Click the New blank frame button on the toolbar to add more frames.
3. Click the Library button to add clip art, photos, or images you have collected.
4. Click the Tools button to use drawing tools to create your own illustrations.
5. Click the Clone button on the toolbar to duplicate frames. Make changes to the objects on the frames to create animation.
6. Click the Text tool on the Tools panel to add text. Use the handles and Format options to change how the text looks.
7. Click the Record tool on the Tools panel to add narration.
8. Select a frame or group of frames and adjust the Duration slider on the Tools panel to change the timing.
9. Click the Save button on the toolbar to save the file.
10. Click the Project button and choose Export to create an animated movie to share.

Share

Have teams share their PSAs with the class while talking about the collaborative process it took to create the PSA. You might choose to share the PSAs on your school web site, or present them during morning announcements. You may also be to share the PSAs with your local access television station to help educate the community.

Assessment

The fact vs. opinion organizer, vision, and storyboard will give insight to the direction teams are heading with their project. Assessing these items and observing the collaborative process before students begin working in Frames may help ensure the successful completion of the PSA. You may want to have students keep a project journal or write daily reflections, as it will be impossible to hear every student's comments during the process. The final PSA will help you assess their understanding of the issue as well as their ability to persuade viewers using multimedia.

Resources

Chiras, Daniel D., John P. Reganold, and Oliver S. Owen. Natural Resource Conservation: Management for a Sustainable Future
ISBN: 0130333980

Botkin, Daniel B. and Edward A. Keller. Environmental Science: Earth as a Living Planet
ISBN: 0471389145

Standards

Common Core Anchor Standards for English Language Arts - Grade 5-12

Text Types and Purposes
1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others

Speaking and Listening Standards

Presentation of Knowledge and Ideas
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

NSES - National Science Education Standards

CONTENT STANDARD F: As a result of activities in grades 5 - 8, all students should develop understanding of:
• Personal health
• Populations, resources, and environments
• Natural hazards
• Risks and benefits
• Science and technology in society
Take a Tour of a Biome

Engage
Step 1: Introduction
Complete a Biomes KWHL chart as a class to get students thinking about biomes that exist around the world, activate prior knowledge, and assess what students already know about biomes. Then, using online resources, introduce students to the different biomes. If you have access to the unitedstreaming movie library, you may also want to show a movie about the biomes.

Once students have a strong understanding about biomes, group students into teams of 3-4. Assign each team the task of creating a travel web site for a tour through a different biome.

Step 2: Online Research
Have student teams research the following questions about their biome:

1. Where does the biome exist?
2. What plants and animals live in the biome?
3. What is the climate like in the biome?
4. What food chains exist in the biome?
5. What landforms exist in the biome?
6. What places of interest are found in this biome?
7. What makes this biome interesting to visit?

Create
Step 3: Project Work
Students will use Share as a web authoring tool to create a web site advertising a tour of their biome. Students should use the biomes category in Pics4Learning as a resource for adding pictures to their project. The biome web site created in Share must include:

1. A map of where this biome exists.
2. Landforms that exist in the biome.
3. Student-drawn pictures.
4. Information about the biome's climate.
5. Examples of food chains which exist within the biome.
6. What places should a visitor be sure to see?
7. Information about why people should visit your biome.

Students can use a storyboard to organize their ideas before creating their web site.

Students should build their information into a Share project. Then, publish the project as HTML or an interactive PDF.

Share
Step 4: Present the Project
Have the students present their tours to parents and community members to encourage them to take their vacations in a specific biome!

Identifiers
Grade Level
4-6
Subject
Language Arts, Science
Duration
1 week
Objective
Students learn about the five biomes: aquatic, desert, forest, grassland, and tundra.
Description
Students learn about the five biomes through as they create a travel brochure.
Application
Pixie®, Wixie®, and Share®

Process
Authentic Task
Airline prices have been dropping lately, causing people to take more vacations. The owner of Journey4Less, a local travel agency, wants to offer special biome vacation packages. The owner has asked for your help to create an informational web site brochure for a vacation to one of the biomes.
**Steps for Students**

**Market Your Tour in Share™**
When your tour itinerary is complete, use Share to create the marketing web site. Make sure that the site has a title page, navigation, interesting backgrounds, as well as text that provides information about your biome.

1. Launch Share.
2. Click the Text tool on the Tool Palette. Add a title to your first page.
3. Click the New Page button on the Tool Palette to add more pages.
4. Click the Library tab to add graphics to a page.
5. In the Library, you can add graphics from the Clip Art or Pics4Learning library or click the Browse Files button to add an image you have painted, taken with a digital camera, or downloaded from online.
6. In the Buttons folder in the Library tab choose a navigational button to add to the page.
7. Go to the Library tab and choose to add sounds, movies, and other actions to your tour.
8. Go to the File menu and choose Save As. Use the Save in/Where pulldown menu to choose a place to save the file, type a name in the File Name/Save as field, and click the Save button.
9. Click the Publish button on the Tool Palette, choose HTML. Use the Save in/Where pull-down menu to choose a place to save the web page, give the file a name in the File Name/Save as field, and click the Save button.

**Assessment**
The students will research their biome of choice for their web site.

The students will synthesize their knowledge based upon their online research to create the informational web site. This web site must include various facts about the particular biome, including a persuasive argument as to why tourists should visit their biome.

**Resources**


ISBN: 086505875X.


World Biomes
www.ucmp.berkeley.edu/glossary/gloss5/biome/

Mission: Biomes
earthobservatory.nasa.gov/Laboratory/Biome/

**Standards**

**NSES-National Science Standards**

**CONTENT STANDARD C**

As a result of their activities in grades 5-8, all students should develop understanding of:

- Structure and function in living systems
- Reproduction and heredity
- Regulation and behavior
- Populations and ecosystems
- Diversity and adaptations of organisms

As a result of activities in grades K-4, all students should develop understanding of:

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

**Common Core Anchor Standards for English Language Arts - K-5**

**Writing**

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

**Speaking and Listening**

2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

**NETS 3-5 Performance Standards:**

1. Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively. (1)

4. Use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum. (3)

5. Use technology tools (e.g., multimedia authoring, presentation, Web tools, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom. (3, 4)
Soil
Diary of a Worm Comic

Identifiers

Grade Level
3–5

Subject
Science and Language Arts

Duration
1 week

Objective
Students will learn about layers, components, and inhabitants of soil.

Description
Students will investigate different types of soil. Using Diary of a Worm as inspiration, they will use Pixie or Wixie to create a media campaign to educate others about the layers, components, and inhabitants of soil and explain why soil is beneficial.

Application
Pixie® or Wixie®

Process
Authentic Task
When In a move to reduce landscaping budgets and keep their yards and businesses cleaner, many people are paving over areas of dirt around their homes and stores. Fortunately, you know that dirt is more than just dirt - it’s soil, home to creatures and plants that are important to the Earth's health.

Create
Let students know they will be responsible for educating others about the benefits of soil. Form small teams of students and have them list the stories, facts, and ideas they think will be helpful in making a successful argument. Teams should review their notes, complete additional research, and develop a plan for the product they will create to educate others.

Engage
There are many types of soil, each with its own unique characteristics and benefits for the ecosystem in which it is found. Bring different types of soil into your classroom as well as investigate different types of soil found around your school and community. Discuss the characteristics of each type of soil and document with pictures, descriptive words and research of uses, including the pros and cons of using specific soils for different purposes.

Students should be able to answer:
1. What is soil?
2. What are the layers of soil?
3. What plants and animals depend on soil?
4. How do we depend on those plants and animals?
5. What are the benefits of soil?

Read Doreen Cronin’s Diary of a Worm. Ask students to explain the benefits of soil and what role a worm plays in the ecosystem. Discuss the practice of paving over “dirt” to save money.

1. What would be the result of the paving over the dirt?
2. What alternatives used will make the “dirt” more valuable for everyone?

Discuss ways students could educate others about the benefits of soil, such as stories, brochures, public service announcements, or comics.

Have teams share their proposals with the rest of the class. This allows all teams to benefit from all students’ thorough research, powerful facts, and creative ideas. Ask each team to choose one or two core arguments and begin determine how their team might best make the case to support their position, developing products such as presentations, bumper stickers, posters, public service announcements, children’s stories, brochures, or comics.

Students can use Pixie to develop their materials. Student work should be saved,
exported, printed, and published so that it can be shared with others.

Share
Have students present their information to other students at school during an assembly or at a booth on the playground or in the cafeteria.

You might choose to share PSAs on your school web site or present them during morning announcements. You may also be to share the PSAs on your local access television station to help educate the community. Post student videos and web sites to your school web server or to a video sharing community for wider distribution. Brochures can be printed and distributed at local coffee shops and garden stores.

You could also turn this project into a parent night or community event by hosting a “Don’t Pave It!” trade show. Have teams make presentations and share their resources at different booths and make-and-take events.

Assessment
You can begin to evaluate students’ content knowledge during the initial investigations of soil and from discussions about Diary of a Worm and the paving problem. Ask questions about their research and arguments to evaluate comprehension and understanding. Engaging students in discussion about the information they have found will help you identify misconceptions and better assess understanding before project work begins.

The final presentations and media products will help you evaluate how well students are able to apply knowledge and information to communicate an idea and craft written and visual arguments.

Resources
Cronin, Doreen. Diary of a Worm. ISBN: 043969745X

Rosinsky, Natalie. Soil: Dirt: The Scoop on Soil. ISBN: 1404803319

Dirt! The Movie. ASIN: B00366E1AK

Fact Monster: Soil
www.factmonster.com/dk/encyclopedia/soil.html

Discovery Education: The Dirt on Soil
http://school.discoveryeducation.com/schooladventures/soil

Research to Build Present Knowledge
7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Speaking and Listening Theme
Comprehension and Collaboration
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas
4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

NSES - National Science Education Standards: Physical Science
CONTENT STANDARD B:
As a result of the activities in grades K-4, all students should develop an understanding of
- Properties of objects and materials

Earth and Space Science
Content Standard D
As a result of their activities in grades K-4, all students should develop an understanding of
- Properties of earth material

NETS for Students:
1. Creativity and Innovation
Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

2. Communication and Collaboration:
Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
Engage
By now, most students have seen an infographic, but may not have thought about how they are used to help share data and information. Share a few sample infographics that are relevant to your classroom content and/or students' interests. Here are a few examples to get you started. Explore your text books, support resources, and classroom posters for more examples.

- 70 Years of Batman Evolution tinyurl.com/k2f4okj
- Facebooking Your Parents tinyurl.com/ljwnpoo
- +50 Ways of Visualizing BP's Dark Mess tinyurl.com/n23gfwd
- Then/Now: Same Camping Gear Essentials, But Better tinyurl.com/n7au7ha

You can also share a snippet from the “Beauty of Data Visualization” TED Talk by David McCandless. Consider assigning this as homework prior to beginning the project.

Create
The process begins not with making the infographic, but with research. Students will need time to research their selected concept as well as think about how they will visually convey it. Assess for understanding and comprehension of the content as they as they collect and clarify information.

Infographics, especially those that include lots of data, ALWAYS include citations. Take a moment to remind your students to capture citations for information they are including in their posters.

When their notes are complete and they are confident about the information and their knowledge of it, students/teams should produce a rough visual sketch of how they will share the information. Organization and design of the poster will be critical in informing others. Check in again to evaluate how well they are thinking about representing data and information.

As they plan out design, students should ask and answer questions like:

1. Which information, facts, and data are essential to include? Which aren’t?
2. What colors and layout works best in sharing the information?
3. What graphs and graphics best convey information and data to the viewer?
4. What is the order, or flow, of information?
Steps for Students

Designing an Infographic

You can draw and use shapes to create an infographic in Share.


2. Click the Library button and open the Clip Art folder.

3. Open the Symbols and Icons folder and open the Infographics folder.

4. Click and drag the symbols you need on to your page.

5. Click a graphic, click the Tools button on the toolbar to choose a new fill color.

6. Click the Tools button and Draw Shapes button to create your own infographic shapes.

7. Use the Fill options to add color and texture to the objects in your infographic.

8. Use the Text tool to add text boxes explanations and descriptions.

9. Click the Library button, (you may need to go to the library Home) and select Special Objects to add a table.

10. Click the Save button on the toolbar.

11. Click the Project button on the toolbar and choose Print to print a copy of the infographic.

12. Click the Project button on the toolbar and choose Export to save the project as an image or PDF.

You may want to take a moment to look back at your samples and discuss how various infographics are structured. Since the point of an infographic is to transfer knowledge and information quickly, the final poster should be informative, simple, engaging, and design-friendly.

If you are building infographics in Share, adjust the canvas size and orientation before you begin. You can use the drawing tools to create simple shapes as well as add and color common infographic symbols from the Symbols and Icons — Infographics library.

Share

Print student posters and display in your room or around school. Publish the posters to PDF and image files to post on your classroom and school web site. Then, share them via blog, Edmodo, and social media, such as your school’s Facebook page or teacher’s Twitter account. If the infographics are centered on a topic you are studying in your classroom, collect them into one file and use them as an electronic curriculum resource next year. You may also want to share this collection online for other students and teachers to use.

Assessment

The completed infographic poster is a great artifact for summative assessment of content knowledge and ability to communicate information. Conduct formative assessments as students are collecting information and data during the research process and designing a rough sketch plan for their poster. You may also want to evaluate planning and team work skills demonstrated during the process.

Resources

The beauty of data visualization – TED Talk by David McCandless tinyurl.com/34cl3yq

Infographics in Education infographicsineducation.wikispaces.com

10 Tips for Designing Infographics tinyurl.com/346aoxh

Standards

Common Core Anchor Standards for English Language Arts - Grade 6-8

Reading Theme

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

Writing Theme

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
Magical Metamorphosis

Identifiers

Grade Level
K–3

Subject
Science

Duration
1 week

Objective
Students learn the life cycle of a butterfly.

Description
Students use Pixie or Wixie to write and illustrate stories that show the different stages of a butterfly's metamorphosis.

Application
Pixie® or Wixie®

Process

Authentic Task
Most young children are familiar with butterflies and caterpillars and love to listen to stories about them, whether they are printed and found in the library or listened to online or using an iPad or tablet.

As budding scientists and authors, tell the students in your class that they are going to write and illustrate their own butterfly stories to teach younger students about the life cycle of a butterfly and get them excited about reading.

Create
Tell your young scientists and authors that they are going to write and illustrate their own butterfly life cycle stories! Go back and reread the list of feelings the class thought a butterfly or caterpillar could have. Have students choose one feeling to describe the main character in their story.

Share a character/setting/events organizer with each student. Have them write the feeling in the top of the character box. Students can then brainstorm ideas for setting and events. Remind students that events in their story need to make sense with the changes (events) in the butterfly's life cycle.

Give the students a blank 4-stage cycle diagram to organizer their writing. Students can refer to the cycle diagram you created as a class or on their own to make sure they write about the stages correctly.

As students think about what might happen in their story, have them write words and simple ideas next to the boxes on the cycle diagram to describe what happens to their character during each stage of metamorphosis.

Let students know that their book will need to have at least one page for each stage in the life cycle. Have students develop a first draft of their story.

Ask students to read their rough draft three times and answer the following questions:

1. Did I make each stage of life cycle of the butterfly clear?
2. Will a reader like my story? Why?
3. What pictures can I add to help tell the story?

Give students time to make edits to their rough draft. Students should also indicate which sentences will be on each page.

Identifiers

Grade Level
K–3

Subject
Science

Duration
1 week

Objective
Students learn the life cycle of a butterfly.

Description
Students use Pixie or Wixie to write and illustrate stories that show the different stages of a butterfly's metamorphosis.

Application
Pixie® or Wixie®
Next, have students use Pixie or Wixie to design the final book. You can use the booklet template, create your own template, or simply show students how to add pages and text objects. When sentences have been added to each page, have the students use the Paint tools to create illustrations for each page. You can show them how to use the Stickers as well if you want to save time during the illustration process.

If you are sharing the books in digital format, have students narrate the text on each page of the story. If you have lots of students working in a lab, you may want to use headset microphones to cut down on extra noise. You could also have students work on their narration at a center in your classroom set up for this purpose.

As they record, listen, and rerecord they gain valuable practice with reading fluency. The final product can also serve as an example of their fluency.

If you are publishing hard copies, have students click the Print button and choose how they want to share the story. If you are going to bind the pages into a book, then full size will work great. If you want to save paper or colored ink, you can also print at postcard size (4 to a page) and have students cut before binding.

If you are going share the books in digital form, have students use the Projects button to export the project to HTML, PDF, or video.

**Share**
Collect the final printer versions into a classroom or media center display or collect the digital versions into a collection on a page on your school or classroom website or even on iTuniesU! Celebrate with an author signing or reading event. Have younger students at the school read and enjoy the books as well as invite parents, grandparents, and community members to join you.

**Assessment**
At the beginning, you will have an easy opportunity to assess prior knowledge as you ask about butterfly sightings and discuss caterpillars. You can also evaluate analytical and creative thinking as they explain how they would investigate and prove that a caterpillar was also a butterfly. Assess comprehension about the process of metamorphosis and the various stages of a butterfly’s life cycle as your class, or individual student’s, develop a 4-cycle diagram.

Use the character/setting/events organizer and the 4-cycle diagram the students are using to organize their story to help you catch misconceptions. As students are writing the story, ask 5 W’s questions and 5 senses questions to help them write more than the basic facts.

As students begin illustrating their projects in Pixie or Wixie, prompt them with questions about their story to encourage them to add more details and create more complete and specific illustrations. Each student’s voice narration will give you insight into oral proficiency and reading fluency.

**Resources**
Children’s Butterfly www.kidsbutterfly.org/life-cycle
NeoK12 - Metamorphosis Videos www.neok12.com/Metamorphosis

**Standards**
Common Core Anchor Standards for English Language Arts - Kindergarten

**Text Types and Purposes**

**Vocabulary Acquisition and Use**
3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

1.3 & 2.3. Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.

**Production and Distribution of Writing**
K.2. With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.

**Kindergarten**

**Speaking and Listening**

**Presentation of Knowledge and Ideas**
K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.

1.5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.

2.5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

**Next Generation Science Standards**

**Grades K-2 Life Sciences**

K-LS1-1 From Molecules to Organisms: Structures and Processes
Use observations to describe patterns of what plants and animals (including humans) need to survive.

1-LS1-2 From Molecules to Organisms: Structures and Processes
Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1-LS3-1 Heredity: Inheritance and Variation of Traits
Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

2-LS4-1 Biological Evolution: Unity and Diversity
Make observations of plants and animals to compare the diversity of life in different habitats.