

The Language of Science:

Keeping LD Kids Interested While Developing Higher-Level Language Skills

**Fun, Inexpensive Cross-Curricular Lessons Aligned With the
*NJ Core Curriculum Content Standards***

**For Speech Therapists and
Other Really Fun People**

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Science ... in the Speech Room??

We have probably all encountered many of the same obstacles while developing lessons for our LD students. Age-appropriate lessons are too difficult and result in frustration; but lessons that are appropriate to these students' skill levels are too babyish and result in rolled eyes and sighs of disdain. We find ourselves trapped between frustration and boredom. How, then, can we target higher-level language skills in our LD students? With science, of course!

Why science? Simple – it's FUN! Incorporating simple science experiments into your language lessons will allow you to target skills such as vocabulary, cause and effect, sequencing, making predictions, answering questions, asking questions, comparing and contrasting, synthesizing information, and more! Because the experiments are all dynamic and engaging, students are never bored; but the consistent format of the units allows them to develop and improve skills through multiple repetitions. Each of the three units follows the same plan. Depending on the skill level of your students, the activities can be completed together as a group, or with increasing independence.

First there is a KWL chart. This is a great graphic organizer to help students understand what they will be learning. The "What I Know" and "What I Want to Know" sections should be filled out on the first day of the unit. At the conclusion of the unit, the section "What I Learned" can be completed. If any questions in the "What I Want to Know" section remain unanswered, students can research the answers in the school library or on the internet.

Next in the unit is an introduction to the topic. This can be read aloud by the therapist, read aloud by the students, or read silently by the students. New vocabulary is presented in this section. Students are given the opportunity to find word meanings within the text as well as look up word meanings online or in a dictionary.

Then comes the fun part - the experiments! Plan on conducting only one experiment during a session. Because the materials are inexpensive and easy to acquire, it's a good idea to allow students to repeat the experiment a few times. Students can use the "Field Journal" to document the different ways they conducted the experiment and the results they obtained. Again, the Field Journal can be completed together as a group or individually. Be advised: these experiments can be messy! Covering the area with a drop cloth or butcher paper is a great idea.

After both experiments in the unit have been completed, students can use the "Compare and Contrast" worksheet to gain a better understanding of the similarities and differences between the experiments.

The final portion of each unit contains extensions to the experiments. These activities allow students to connect the information they learned with other subject areas such as Language Arts Literacy and Social Studies. At the back of this booklet is a list of NJ Core Curriculum Content Standards that can be aligned with the various activities. And because these lessons are aligned with the NJCCCS, they create an excellent opportunity for collaboration and cooperative teaching!

Unit one

Invisible Ink

Invisible Ink

Invisible ink has been used by spies for hundreds of years. It is a type of ink that cannot be seen unless you know how to reveal it, such as with heat or chemicals. During wars, like the Revolutionary War, spies used invisible ink to help them deliver messages without being discovered by the enemy. Informants were the people to whom spies were supposed to give their messages. Because the spies blended in, codes were developed so that spies and informants could recognize one another. Some codes included: wearing a certain color of socks, whistling a special song, or wearing a certain hairstyle.

During the Revolutionary War, women, children, and African Americans were often used as spies because they did not look suspicious; they blended into their surroundings. Also, it was assumed that these people did not understand the messages they were carrying, and so could not give away much information if they were caught. It was very important for spies to be very brave and quick thinking so that they could destroy or hide their secret messages if they were caught. If a spy was caught with a message, he or she might be put in jail or even killed!

Vocabulary:

Invisible Ink: _____

Informant: _____

Look It Up! Use the internet or a dictionary to research the definitions of these words:

Reveal: _____

Suspicious: _____

Name: _____

Invisible Ink

Research It:

Use the internet or your school library to research the following people:

- Lydia Darragh
- Anna Strong
- James Armistead

Write About It:

Spies had to have good places to hide messages. Write a story or draw a picture of how or where you would hide a message. What would you do with the message if you were caught?

Think About It:

If you were a prisoner and received a note written in invisible ink, which type of invisible ink would you prefer? Why?

If you received a note written in lemon juice, but did not have a light bulb or candle how could you reveal the message?

If you were a spy at your school, what code could you use to help your informant identify you?

Do you think spies today use invisible ink? Why or why not? What other methods of communication do today's spies use?

Invisible Ink: *Part One*

Ingredients:

Baking Soda
Water
Paintbrush or toothpick
Purple grape juice concentrate
Sponge

What To Do:

1. Mix equal parts baking soda and water.
2. Use a small paintbrush or toothpick to write your message on a piece of paper, using the baking soda solution as ink.
3. Allow the ink to dry.
4. Paint over the paper with grape juice concentrate to reveal your message!

Why Does It Happen?

Baking soda and grape juice react with each other in an acid-base reaction, producing a color change in the paper. This means that a chemical reaction causes the base to lose a proton, and the acid takes an extra proton. This results in a change of color.

Things To Try:

1. Try this experiment with other acids and bases. Some acids you might try are: lemon juice, vinegar, carbonated beverages, and toilet bowl cleaners. Some bases you might try are: sodium bicarbonate, antacids, lime, and ammonia. Did any other combination work as well as the baking soda and grape juice? Why do you think this happened?

Name: _____

Field Journal
Invisible Ink One

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this invisible ink:

1.

2.

3.

Was my hypothesis correct? Yes No

What I might do differently next time:

Invisible Ink: *Part Two*

Ingredients:

Lemons or bottled lemon juice
Paper
Paintbrush or toothpick
Heat source, such as a light bulb

What to do:

1. Squeeze the lemons to get the juice out, or use bottled lemon juice.
2. Use a small paintbrush or toothpick to write your message on paper, using the lemon juice as ink.
3. Allow the ink to dry.
4. Hold the paper over the heat source (being careful not to let the paper burn) to reveal your message!

Why Does It Happen?

The writing turns brown because the acidity of the lemon juice begins to break down, or destroy the paper. The weakened paper burns before the rest of the paper. Be careful not to overdo your heating and ignite the paper!

Things To Try:

1. Lemon juice is also called citric acid because it comes from citrus fruits. Try making invisible ink out of other citrus fruits and non-citrus fruits. Which fruit juice worked best? Why do you think this is so?

Name: _____

Field Journal
Invisible Ink Two

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this invisible ink:

- 1.
- 2.
- 3.

Was my hypothesis correct? Yes No

What I might do differently next time:

Unit Two

Goop

Name: _____

Goop

Kids love to play with messy things, so goop is a perfect toy! Goop can be made in two ways: by a chemical change, or by a physical change. Goop can also be a solution or a mixture.

During a chemical change, two different things join together to become something else. Once this happens, the original ingredients can't be changed back. Think about making a cake: when flour, eggs, and butter are mixed together and baked, they can never be separated again. The goop made with Borax is an example of a chemical change. Once the Borax joins with the glue they cannot go back to their original forms. This mixture creates a goop that is stretchy like elastic or rubber.

A physical change happens when two things are mixed together but do not change or join. Dirt and water can be mixed together to make mud, but when the water is taken away (or dries up) the dirt goes back to its original shape. The goop made with cornstarch is an example of a physical change. The cornstarch seems different while it is mixed with water, but once the water is taken out of the mixture, the cornstarch goes back to its original shape.

The cornstarch and water mixture behaves like a liquid when still or moving slowly, but acts almost like a solid when poked, pressed, or stirred abruptly. A liquid that becomes more viscous (solid) when agitated (moved quickly) is called dilatant. Soon dilatant liquids may be used to make bullet-proof vests because they are more flexible and more comfortable to wear than traditional Kevlar vests.

Vocabulary:

Chemical Change: _____

Physical Change: _____

Dilatant Liquid; _____

Look It Up! Use the internet or a dictionary to research the definitions of these words:

Original: _____

Mixture: _____

Name: _____

Goop

Research It:

Use the internet or your school library to research different types of mixtures used in science. What are some mixtures you use in your daily life?

Write About It:

Imagine that you created a type of goop that never stopped expanding. Describe what would happen as the goop started to spread and what you would do to stop it.

Think About It:

Why do you think dilatant liquid (cornstarch) might be used in bullet proof vests, but polymer liquid (borax) will not?

If left out to evaporate, the dilatant liquid will go back to its original form (cornstarch), but the polymer liquid (borax and glue) will not. Explain why this happens.

Goop: *Part One*

Ingredients:

Borax
White school glue
Food coloring (optional)
Ziploc bags
Water

What To Do:

1. Mix 1-2 tablespoons of Borax with $\frac{1}{2}$ cup of water until no more borax will dissolve.
2. In a separate container, mix $\frac{1}{4}$ cup of glue with $\frac{1}{4}$ cup of water.
3. In a Ziploc bag, mix $\frac{1}{2}$ cup of the borax solution with $\frac{1}{2}$ cup of the glue solution. Add a few drops of food coloring if desired.
4. Seal the bag and knead the mixture until thoroughly combined.
5. Have fun!

Why Does It Happen?

The borax is acting as a crosslinking agent or "connector" for the glue molecules. Once the glue molecules join together to form even larger molecules called polymers, you get a thickened gel very similar to slime.

Things To Try:

1. Experiment with the things that this goop can do. Can it bounce? Can it stretch? Does it act differently if moved quickly or slowly?
2. Let a blob of goop and a blob of glue dry. How are they the same or different?
3. Try making this good with liquid starch instead of the Borax/water. How are the two types of goop the same or different?

Name: _____

Field Journal
Goop One

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this goop:

1.

2.

3.

Was my hypothesis correct? Yes No

What I might do differently next time:

Goop: *Part Two*

Ingredients:

Cornstarch

Water

What To Do:

1. In a bowl, mix together cornstarch with a small amount of water by lifting the mixture from the bottom of the bowl to the top with your fingers.
2. Play with it!

Why Does It Happen?

The cornstarch and water mixture behaves like a liquid when still or moving slowly, but acts almost like a solid when poked, pressed, or stirred abruptly. A liquid that becomes more viscous (solid) when agitated (moved quickly) is called dilatant. Soon dilatant liquids may be used to make bullet-proof vests because they are more flexible and more comfortable to wear than traditional Kevlar vests.

Things To Try:

1. Experiment with the different things this goop can do. What happens when you stab it with your finger? What happens when you rest your finger gently on top of it? What happens when you slowly lift it out of the bowl? What happens if you lay a penny gently on the surface? What happens when you grab it and squeeze it?
2. Let some of this goop dry out. Compare it to the original cornstarch. Is the dried-out goop the same as the cornstarch or different? Why do you think this is so?

Name: _____

Field Journal
Goop Two

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this goop:

1.

2.

3.

Was my hypothesis correct? Yes No

What I might do differently next time:

Unit Three

Explosions

Name: _____

Explosions

Explosions happen when pressure builds in a small space. Pressure is the way that one thing pushes on another thing. In most explosions, gas is pushing on the walls of a container. Eventually, the pressure of the gas is stronger than the container and it explodes! The gas in an explosion might be caused by a chemical reaction. A chemical reaction happens when one chemical is turned into another chemical.

One example of this is a volcano. A volcano is any area of the earth, especially a mountain, which will explode if the pressure below it gets too great. Gas and heat inside a volcano put pressure on the walls of the volcano. When the force of the pressure is stronger than the walls of the volcano, it explodes and the gas, heat, and lava are thrown high into the air.

Another example of an explosion caused by pressure is the popping of a balloon. If you continue to inflate a balloon that is full, soon the force of the air inside the balloon will be stronger than the rubber of the balloon and it will explode. What other examples of explosions can you think of?

Vocabulary:

Pressure: _____

Chemical Reaction: _____

Volcano: _____

Look It Up! Use the internet or a dictionary to research the definitions of these words:

Lava: _____

Inflate: _____

Name: _____

Explosions

Research It:

Use the internet or your school library to research the locations of volcanoes around the world. Mark the locations of volcanoes on a map – can you find the area of the world called the “Ring of Fire”? Why do you think it was given this name?

Write About It:

Choose one of the volcano photos and write a short paragraph about it. Be sure to use descriptive words and explain what is happening in the picture.

Think About It:

Areas of the world like Hawaii have very active volcanoes, yet many people choose to live there. Why do you think that people live in volcanic areas? Would you like to live in Hawaii? Why or why not?

If you were a scientist or journalist studying volcanoes, what precautions would you take to make sure that you were safe?

Volcanoes explode because they are weaker than the pressure of the gas inside. If volcanoes suddenly became super-strong and did not explode, what do you think might happen to the earth?



http://www.decadevolcano.net/photos/etna/1106/etna_d13187.jpg



http://www.thesundaytimes.co.uk/sto/multimedia/archive/00015/580STN_VOLCANO4_1566_15672a.jpg

Explosions: *Part One*

Ingredients:

Flour
Salt
Cooking oil
Warm water
Tinfoil baking pan (preferable with high sides)
Red food coloring
Baking soda
Vinegar
Tissues or toilet paper

What To Do:

1. Mix 6 cups flour, 2 cups salt, 4 tablespoons cooking oil, and 2 cups of water in a large bowl. Work the ingredients with your hands until smooth and firm, like playdough. Add more water to the mixture if needed.
2. Stand the soda bottle in a baking pan. Mold the salt dough around the bottle making sure you don't cover up the bottle mouth or drop any dough into the bottle. Take your time on this step and build your volcano with as much detail as you like.
3. Fill the bottle about halfway with vinegar mixed with a little of the red food coloring.
4. Put 1-2 tablespoons of baking soda onto a single layer of tissue and carefully roll or fold it into a baking soda packet. Make sure that the packet isn't too fat to fit through the opening of the bottle.
5. Drop the baking soda packet into the bottle of vinegar and watch what happens!

Why Does It Happen?

This happens because mixing baking soda and vinegar produces a chemical reaction in which carbon dioxide gas is created - the same gas that bubbles in a real volcano. The gas bubbles build in the bottle, forcing the liquid 'lava' mixture out of the bottle and down the sides of your volcano.

Things To Try:

1. Try experimenting with the amounts of baking soda and vinegar. Do you think the volcano with more baking soda or more vinegar will have the best eruption? Why do you think so?
2. Try experimenting with ingredients at different temperatures. Does it make a difference if the vinegar is warm or cold? Does it make a difference if the baking soda is warm or cold? What if one ingredient is warm and the other is cold? Why do you think temperature will or will not make a difference?

Name: _____

Field Journal
Explosion One

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this explosion:

1.

2.

3.

Was my hypothesis correct? Yes No

What I might do differently next time:

Explosions: *Part Two*

Ingredients:

Diet Pepsi or Diet Coke
Mentos

What to do:

1. Remove the lid from the Diet Pepsi.
2. Stack as many Mentos as you can between your thumb and first finger. Position the stack of Mentos carefully over the bottle opening.
3. Quickly release all the Mentos into the bottle of Diet Pepsi and ***back up!!!***

Why Does It Happen?

All soda is full of tiny bubbles of carbon dioxide gas. In order to form a new bubble, or even to expand a bubble that has already formed, water molecules must make more room by pushing away from each other. Each Mentos candy has thousands of tiny pits all over the surface. These tiny pits are called nucleation sites - perfect places for carbon dioxide bubbles to form. As soon as the Mentos hit the soda, bubbles form all over the surface of the candy. To make room for all of these new bubbles, the water must move aside – the only place for it to go is up and out! Why should you use diet Coke or diet Pepsi? The simple answer is that diet soda just works better than regular soda. Some people speculate that it has something to do with the artificial sweetener, but the verdict is still out.

Things To Try:

1. Try to invent ways to get the most possible Mentos into the bottle. Which method worked the best?
2. Try experimenting with different types of diet soda, such as Diet Pepsi, Diet Dr. Pepper, and Diet Sprite. Does one type of soda make the best eruption?
3. Try experimenting with the soda at different temperatures. Does it make a difference if the soda is warm or cold? Why do you think so?

Name: _____

Field Journal
Explosion Two

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this explosion:

1.

2.

3.

Was my hypothesis correct? Yes No

What I might do differently next time:

Name: _____

Experiment: _____

Research It:

Write About It:

Think About It:

Name: _____

Field Journal

Experiment: _____

Hypothesis (What I think will happen):

Procedure (What I did):

Result (What happened):

Adjectives that describe this experiment:

- 1.
- 2.
- 3.

Was my hypothesis correct? Yes No

What I might do differently next time:

NJ Core Curriculum Content Standards Science: Grades 3-4

{SCI.3-4.5.1.A.1} Raise questions about the world around them and be willing to seek answers through making careful observations and experimentation.

{SCI.3-4.5.1.A.2} Keep records that describe observations, carefully distinguish actual observations from ideas and speculations, and are understandable weeks and months later.

{SCI.3-4.5.1.B.1} Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.

{SCI.3-4.5.6.A.4} Show that not all materials respond the same way to what is done to them. (*Goop*)

{SCI.3-4.5.6.B.1} Combine two or more materials and show that the new material may have properties that are different from the original material.

{SCI.3-4.5.8.C.1} Recognize that some changes of the Earth's surface are due to slow processes such as erosion and weathering, and some changes are due to rapid changes such as landslides, volcanic eruptions, and earthquakes. (*Explosions*)

{SCI.3-4.5.8.D.1} Use maps to locate and identify physical features on the Earth. (*Explosions*)

{SCI.3-4.5.7.B.1} Identify sources of heat and demonstrate that heat can be transferred from one object to another. (*Invisible Ink*)

NJ Core Curriculum Content Standards Science: Grades 5-6

{SCI.5-6.5.1.A.1} Evaluate the strengths and weaknesses of data, claims, and arguments.

{SCI.5-6.5.1.A.2} Communicate experimental findings to others.

{SCI.5-6.5.1.B.1} Identify questions and make predictions that can be addressed by conducting investigations.

{SCI.5-6.5.1.B.3} Collect, organize, and interpret the data that result from experiments.

{SCI.5-6.5.6.A.3} Describe the properties of mixtures and solutions, including concentration and saturation.

{SCI.5-6.5.6.B.1} Recognize evidence of a chemical change.

{SCI.5-6.5.8.D.1} Utilize various tools such as map projections and topographical maps to interpret features of Earth's surface. (*Explosions*)

NJ Core Curriculum Content Standards Language Arts Literacy: Grade 3

{LA.3.3.1.A.1} Recognize that printed materials provide specific information

{LA.3.3.1.F.4} Use a grade-appropriate dictionary with assistance from teacher.

{LA.3.3.1.G.4} Ask how, why, and what-if questions in interpreting nonfiction texts.

{LA.3.3.1.H.2} Draw conclusions from information and data gathered.

{LA.3.3.2.A.1} Generate possible ideas for writing through recalling experiences, listening to stories, reading, brainstorming, and discussion.

{LA.3.3.2.B.1} Write a descriptive piece, such as a description of a person, place, or object.

{LA.3.3.2.B.2} Write a narrative piece based on personal experiences.

{LA.3.3.2.D.9} Write non-fiction text (e.g., reports, procedures, letters).

{LA.3.3.3.A.1} Listen and follow a discussion in order to contribute appropriately.

{LA.3.3.3.A.2} Stay focused on topic.

{LA.3.3.3.A.3} Take turns.

{LA.3.3.3.A.4} Support an opinion with details.

{LA.3.3.3.B.1} Develop appropriate questions to explore a topic.

{LA.3.3.3.B.2} Contribute information, ideas, and experiences to classroom inquiry.

{LA.3.3.3.C.1} Use vocabulary related to a particular topic.

{LA.3.3.4.A.2} Exchange information through verbal and nonverbal messages.

{LA.3.3.4.B.1} Follow two-and three-step directions.

NJ Core Curriculum Content Standards Language Arts Literacy: Grade 4

{LA.4.3.1.F.4} Use a grade-appropriate dictionary (independently) to define unknown words.

{LA.4.3.1.G.5} Follow simple multiple-steps in written instructions.

{LA.4.3.1.H.1} Use library classification systems, print or electronic, to locate information.

{LA.4.3.2.B.2} Write informational reports across the curriculum that frame an issue or topic, include facts and details, and draw from more than one source of information.

{LA.4.3.2.B.1} Create narrative pieces, such as memoir or personal narrative, which contain description and relate ideas, observations, or recollections of an event or experience.

{LA.4.3.2.D.4} Write independently to satisfy personal, academic, and social needs (e.g., stories, summaries, letters, or poetry).

{LA.4.3.2.D.8} Write informational reports that frame a topic, include facts and details, and draw information from several sources.

{LA.4.3.2.D.11} Demonstrate higher-order thinking skills through responses to open-ended and essay questions in content areas or as responses to literature.

{LA.4.3.3.A.1} Use details, examples and reasons to support central ideas or clarify a point of view.

{LA.4.3.3.A.2} Stay focused on a topic and ask relevant questions.

{LA.4.3.3.B.1} Develop questioning techniques (e.g., who, what, when, where, why, and how).

{LA.4.3.3.B.3} Explore concepts by describing, narrating, or explaining how and why things happen.

{LA.4.3.3.B.5} Reflect and evaluate information learned as a result of the inquiry.

{LA.4.3.3.C.3} Use appropriate vocabulary to support or clarify a message.

{LA.4.3.4.A.1} Listen actively for a variety of purposes such as enjoyment and obtaining information.

{LA.4.3.4.A.3} Interpret vocabulary gained through listening.

{LA.4.3.4.B.1} Demonstrate competence in active listening through comprehension of a story, interview, and oral report of an event or incident.

{LA.4.3.4.B.6} Follow three-and four-step oral directions.

NJ Core Curriculum Content Standards Language Arts Literacy: Grade 5

{LA.5.3.1.F.2} Infer specific word meanings in the context of reading passages.

{LA.5.3.1.F.4} Use a grade-level appropriate dictionary independently to define unknown words.

{LA.5.3.1.H.1} Use library classification systems, print or electronic, to locate information.

{LA.5.3.1.H.2} Develop and revise questions for investigations prior to, during, and after reading.

{LA.5.3.1.H.3} Use multiple sources to locate information relevant to research questions.

{LA.5.3.1.H.7} Summarize and organize information by taking notes, outlining ideas, and/or making charts.

{LA.5.3.2.A.2} Write informational compositions with multiple paragraphs that present important ideas, provide details, and offer a concluding paragraph.

{LA.5.3.2.B.2} Write a range of grade appropriate essays across curricula (e.g., persuasive, personal, descriptive, issue- based)

{LA.5.3.2.B.3} Write grade appropriate, multi-paragraph, expository pieces across curricula (e.g., problem/solution, cause/effect, hypothesis/results, feature articles, critique, research reports).

{LA.5.3.2.B.6} Sharpen focus and improve coherence by considering the relevancy of included details and adding, deleting, and rearranging appropriately.

{LA.5.3.2.D.2} Gather, select, and organize information appropriate to a topic, task, and audience.

{LA.5.3.2.D.9} Write reports based on research with a scope narrow enough to be thoroughly covered, supporting the main ideas or topic with facts, examples, and explanations, and including a works consulted page.

{LA.5.3.2.D.13} Demonstrate higher-order thinking skills and writing clarity when answering open-ended and essay questions in content areas or as responses to literature.

{LA.5.3.3.A.2} Stay focused on a topic and ask relevant questions.

{LA.5.3.3.A.3} Accept others' opinions and respond appropriately.

{LA.5.3.3.A.5} Participate in class discussions appropriately.

{LA.5.3.3.B.1} Respond orally by adding questions and comments while integrating knowledge.

{LA.5.3.3.B.3} Explore concepts by describing, narrating, or explaining how and why things happen.

{LA.5.3.3.B.5} Reflect and evaluate information learned as a result of the inquiry.

{LA.5.3.3.B.6} Solve a problem or understand a task through group cooperation.

{LA.5.3.4.A.1} Listen actively for a variety of purposes such as enjoyment and obtaining information.

{LA.5.3.4.B.1} Demonstrate competence in active listening through responding to a story, interview, or oral report (e.g., summarizing, reacting, retelling).

{LA.5.3.4.B.2} Demonstrate competence in active listening by interpreting and applying received information to new situations and in solving problems.

{LA.5.3.4.B.3} Ask pertinent questions, take notes, and draw conclusions based on information presented.

{LA.5.3.4.B.5} Follow three-and four-step oral directions.

NJ Core Curriculum Content Standards Language Arts Literacy: Grade 6

{LA.6.3.1.C.1} Use a dictionary to decode new words independently.

{LA.6.3.1.C.3} Apply knowledge of new words correctly (refer to word parts and word origin).

{LA.6.3.1.E.1} Activate prior knowledge and anticipate what will be read or heard.

{LA.6.3.1.F.2} Infer specific word meanings in the context of reading passages.

{LA.6.3.1.F.5} Use a thesaurus to identify alternative word choices and meanings.

{LA.6.3.1.H.1} Develop and revise questions for investigations prior to, during, and after reading.

{LA.6.3.1.H.2} Select and use multiple sources to locate information relevant to research questions.

{LA.6.3.1.H.3} Draw conclusions from information gathered from multiple sources.

{LA.6.3.1.H.5} Summarize and organize information by taking notes, outlining ideas, and/or making charts.

{LA.6.3.2.A.1} Write informational compositions of several paragraphs that engage the interest of the reader, state a clear purpose, develop the topic, and conclude with a detailed summary.

{LA.6.3.2.A.2} Generate ideas for writing through reading and making connections across the curriculum and with current events.

{LA.6.3.2.B.2} Write a range of grade appropriate essays across curricula (e.g., persuasive, personal, descriptive, issue-based)

{LA.6.3.2.B.3} Write grade appropriate, multi-paragraph expository pieces across curricula (e.g., problem/solution, cause/effect, hypothesis/results, feature articles, critique, research reports).

{LA.6.3.3.A.1} Support a position with organized, appropriate details.

{LA.6.3.3.A.2} Stay focused on a topic and ask relevant questions.

{LA.6.3.3.A.3} Acknowledge others' opinions and respond appropriately.

{LA.6.3.3.A.5} Participate in class discussion appropriately.

{LA.6.3.3.B.1} Respond orally by adding questions and comments while integrating knowledge.

{LA.6.3.3.B.2} Demonstrate effective use of a variety of questions, including literal, inferential, and evaluative questions.

{LA.6.3.3.B.3} Explore concepts by describing, narrating, or explaining how and why things happen.

{LA.6.3.3.B.6} Solve a problem or understand a task through group cooperation.

{LA.6.3.4.A.1} Listen actively for a variety of purposes such as enjoyment and obtaining information.

{LA.6.3.4.A.2} Listen attentively and critically to a variety of speakers.

{LA.6.3.4.B.1} Demonstrate competence in active listening through responding to a story, interview, or oral report (e.g. summarizing, reacting, retelling).

{LA.6.3.4.B.2} Demonstrate competence in active listening by interpreting and applying received information to new situations and in solving problems.

{LA.6.3.4.B.3} Ask pertinent questions, take notes, and draw conclusions based on information presented.

{LA.6.3.4.B.5} Follow three and four-step oral directions.

NJ Core Curriculum Content Standards Social Studies: Grades 3-4

{SOC.3-4.6.1.A.1} Explain how present events are connected to the past. (*Invisible Ink*)

{SOC.3-4.6.1.A.6} Distinguish fact from fiction.

{SOC.3-4.6.3World} All students will demonstrate knowledge of world history in order to understand life and events in the past and how they relate to the present and the future. (*Invisible Ink*)

{SOC.3-4.6.4.B.2} Discuss the reasons why revolutionary leaders, including George Washington, Thomas Jefferson, Benjamin Franklin, and Governor William Livingston fought for independence from England. (*Invisible Ink*)

{SOC.3-4.6.4.B.3} Discuss New Jersey's role during the American Revolution. (*Invisible Ink*)

{SOC.3-4.6.4.B.5} Identify and discuss major scientific discoveries and inventions, the scientists and inventors who developed them (e.g., Thomas Edison), and their impact on life today.

{SOC.3-4.6.6.A.1} Use physical and political maps to identify locations and spatial relationships of places within local and nearby communities. (*Explosions*)

{SOC.3-4.6.6.B.1} Identify the physical and human characteristics of places and regions in New Jersey and the United States (e.g., landforms, climate, vegetation, housing). (*Explosions*)

NJ Core Curriculum Content Standards Social Studies: Grades 5-8

{SOC.5-8.6.1.A.1} Analyze how events are related over time.

{SOC.5-8.6.1.A.6} Formulate questions based on information needs.

{SOC.5-8.6.1.A.7} Use effective strategies for locating information.

{SOC.5-8.6.1.A.11} Summarize information in written, graphic, and oral formats.

{SOC.5-8.6.4.E.1} Discuss the background and major issues of the American Revolution, including the political and economic causes and consequences of the revolution. (*Invisible Ink*)

{SOC.5-8.6.4.E.4} Explain New Jersey's critical role in the American Revolution, including major battles, the involvement of women and African Americans, and the origins of the movement to abolish slavery. (*Invisible Ink*)

{SOC.5-8.6.6.A.2} Translate maps into appropriate spatial graphics to display geographical information. (*Explosions*)

{SOC.5-8.6.6.A.5} Use geographic tools and technologies to pose and answer questions about spatial distributions and patterns on Earth. (*Explosions*)

{SOC.5-8.6.6.A.8} Use thematic maps to describe places (e.g., patterns of population, diseases, rainfall). (*Explosions*)

{SOC.5-8.6.6.C.3} Predict effects of physical processes and changes on the Earth. (*Explosions*)

{SOC.5-8.6.6.C.5} Describe how the physical environment affects life in different regions (e.g., population density, architecture, transportation systems, industry, building materials, land use, recreation). (*Explosions*)