INSTRUCTIONAL DESIGN FRAMEWORK

SI1Da

**Standard**
Communicate the procedures and results of investigations and explanations through:
- Oral presentations
- Drawings and maps
- Data tables (allowing for the recording and analysis of data relevant to the experiment, such as independent and dependent variables, multiple trials, beginning and ending times or temperatures, derived quantities)
- Graphs (bar, single line, pictograph)
- Writings

**The What**
- Procedures, results, and investigations
- Conclusions, explanations

**The How (DOK)**
Communicate

**Academic Vocabulary**

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Explanations</th>
<th>Oral presentation</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawings</td>
<td>Independent variables</td>
<td>Data tables</td>
<td>Analysis</td>
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<tr>
<td>Experiment</td>
<td>Ending times</td>
<td>Dependent variables</td>
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<tr>
<td>Beginning times</td>
<td>Graphs (bar, single line, pictograph)</td>
<td>Derived quantities</td>
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</tr>
<tr>
<td>Writings</td>
<td>Map</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Kid Friendly Objective**
- I will tell the procedures of investigations through oral presentations, drawings, maps, data tables, graphs, and writing.
- I will tell the results of investigations through oral presentations, drawings, maps, data tables, graphs, and writing.
- I will tell the explanations of investigations through oral presentations, drawings, maps, data tables, graphs, and writing.

**Assessment of Kid Friendly Objectives**
Students will conduct an ongoing experiment in which they will collect data, record observations and report their findings through an oral presentation which will include tables, graphs, charts and drawings.

**Activity**
- Whirly Bird
- Notes over data tables, graphs, conclusions, explanations with hands-on examples
- Activity
INSTRUCTIONAL DESIGN FRAMEWORK

SI1Be

Standard
Compare amounts/measurements.

The What
- Amounts
- Measurements

The How (DOK)
- Compare

Academic Vocabulary
- Compare
- Amounts
- Measurements
- Grams
- Meters
- Liters
- Newtons
- Degrees
- Celsius
- Seconds
- Minutes
- SI units

Kid Friendly Objective
I will compare amounts/measurements in SI units.

Assessment of Kid Friendly Objectives
Students will compare the amounts of various items by determining measurement (metric and standards).

Activity
- Lab activities, daily/weekly measurement quizzes
- Metric Mania
- Film canister investigation

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INSTRUCTIONAL DESIGN FRAMEWORK

SI1Ab

**Standard**

Identify and describe the importance of the independent variable, dependent variables, control of constants, and multiple trials to the design of a valid experiment.

**The What**

Importance of independent variable, dependent variable, control of constants, and multiple trials.

**The How (DOK)**

- Identify
- Describe

**Academic Vocabulary**

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable</th>
<th>Control of constants</th>
<th>Multiple trials</th>
<th>Describe</th>
<th>Valid Experiment</th>
</tr>
</thead>
</table>

**Kid Friendly Objective**

- I will identify independent variable, dependent variables, control of constants, and multiple trials.
- I will describe the importance of the independent variable, dependent variable, control of constants and multiple trials in designing valid experiments.

**Assessment of Kid Friendly Objectives**

- Student will identify I.V, D.V. control of constants from a written scenario.
- Student will describe why an I.V. is necessary to perform a valid experiment.

**Activity**

- Whirly Bird experiment
- Dissolving peanuts
- Pop Your Top Off
INSTRUCTIONAL DESIGN FRAMEWORK

SI1Cd

Standard
Evaluate the reasonableness of an explanation (conclusion).

The What
Reasonables

The How (DOK)
Evaluate

Academic Vocabulary
Conclusion
Reasonableness
Explanation

Kid Friendly Objective
I will evaluate the reasonableness of an explanation (conclusion).

Assessment of Kid Friendly Objectives
Students will write a four paragraph conclusion from an experiment they performed.

Activity
Whirly Bird

Activity
Lab activities all year to include evaluating reasonableness

Activity
Notes with examples

06/08/2009
INSTRUCTIONAL DESIGN FRAMEWORK

Standard
Design and conduct a valid experiment.

The What
Valid experiment

The How (DOK)
Design
Conduct

Academic Vocabulary
Valid experiment
Design
Conduct

Kid Friendly Objective
• I will design a valid experiment.
• I will conduct a valid experiment.

Assessment of Kid Friendly Objectives
• Student will design a valid experiment: including all steps of the scientific method.
• Student will conduct a valid experiment with at least three trials.

Activity
Whirly Bird experiment

Activity
Mixture and solution experiment

Activity
Flip book

06/08/2009
INSTRUCTIONAL DESIGN FRAMEWORK

ST2Aa

**Standard**
Describe how the contributions of scientists and inventors, representing different cultures, races, and gender, have contributed to science, technology, and human activity (e.g., George Washington Carver, Thomas Edison, Thomas Jefferson, Isaac Newton, Marie Curie, Galileo, Albert Einstein, Mae Jemison, Edwin Hubble, Charles Darwin, Jonas Salk, Louis Pasteur, Jane Goodall, Tom Akers, John Wesley Powell, Rachel Carson).

**The What**
Scientists and inventors of many cultures, races, genders have made contributions

**The How (DOK)**
Describe

**Academic Vocabulary**

**Kid Friendly Objective**
I will describe scientific inventions and discoveries made by scientists of all cultures, races, genders, and ages.

**Assessment of Kid Friendly Objectives**
Students will choose a famous scientist from a list of multi-cultural/racial scientists and create a presentation.

**Activity**
Kagan: I have, Who has

**Activity**
Kagan: Sage
Each group will research information on a scientist. Each student will be a sage for a different group.

**Activity**
Journal: List the scientists/inventors you know and their contribution to society.
INSTRUCTIONAL DESIGN FRAMEWORK

**SI1Ca**

**Standard**
Use quantitative and qualitative data as support for reasonable explanations (conclusions).

**The What**
Quantitative and qualitative data

**The How (DOK)**
Use

**Academic Vocabulary**
Qualitative data  
Quantitative data  
Conclusions

**Kid Friendly Objective**
- I will use quantitative data as support for reasonable explanations (conclusions).
- I will use qualitative data as support for reasonable explanations (conclusions)

**Assessment of Kid Friendly Objectives**
Students will gather quantitative data and qualitative data for a variety of rock samples (color, size, shape, texture, mass, density) to explain what each sample is.

**Activity**
Flip book with Whirly Bird Investigation

**Activity**
Soil samples same as assess with soil

**Activity**
Leaf samples, record data, use dichotomy key
**INSTRUCTIONAL DESIGN FRAMEWORK**

**SIICb**

**Standard**
Use data as support for observed patterns and relationships, and to make predictions to be tested.

**The What**
Data as support

**The How (DOK)**
Use

**Academic Vocabulary**
- Use
- Observations
- Predictions
- Data
- Patterns
- Tested
- Support
- Relationships

**Kid Friendly Objective**

- I will use data to support my observations of patterns.
- I will use data to support my observations of relationships.
- I will use data to make predictions to be tested.

**Assessment of Kid Friendly Objectives**
Students will conduct an ongoing investigation and record observations and create predictions based on collected data.

**Activity**
- Whirly Bird, questions, research, hypothesis
- Extensions of Whirly Bird. Question, based on data research, new hypothesis

06/08/2009
INSTRUCTIONAL DESIGN FRAMEWORK

ST2Ba

**Standard**
Describe the difficulty science innovators experience as they attempt to break through accepted ideas (hypotheses, laws, theories) of their time to reach conclusions that may lead to changes in those ideas and serve to advance scientific understanding (e.g., Darwin, Copernicus, Newton).

**The What**
Difficulty science innovators have when trying to break through accepted ideas

**The How (DOK)**
Recognize

**Academic Vocabulary**
Hypotheses
Theories
Laws

**Kid Friendly Objective**
I will recognize the difficulty innovative scientists have had trying to have their ideas, theories, hypotheses, laws accepted at the time they reached them.

**Assessment of Kid Friendly Objectives**
- Geology: Why was Alfred Wagner’s Theory of Continental Drift originally not accepted?
- Mater: How has the discovery of elements in this century supported Medelev’s work with the Periodic Table of Elements.

**Activity**
Choose an innovator. Research. Write a letter as the science innovator explaining the difficulties

**Activity**
Talks with partner: Create a dialogue between your science innovator and a “typical” person of their time.

**Activity**
Journal: What kind of problems do you think scientists had when they tried to get others to believe their ideas? Explain
INSTRUCTIONAL DESIGN FRAMEWORK

SI1Cc

**Standard**
Determine the possible effects of errors in observations, measurements, and calculations on the formulation of explanations (conclusions).

**The What**
Effects of errors

**The How (DOK)**
Determine

**Academic Vocabulary**
Determine  
Measurements  
Conclusions  
Effects of errors  
Calculations  
Observations  
Explanations

**Kid Friendly Objective**
- I will determine the possible effects of errors of observation in an explanation (conclusions).
- I will determine the possible effects of errors in measurements in an explanation (conclusions).
- I will determine the possible effects of errors in calculations in an explanation (conclusions).

**Assessment of Kid Friendly Objectives**
Student will write a four paragraph conclusion from an experiment they performed. Paragraph is to include possible effects of errors of observation, errors of measurement, and errors of calculations.

**Activity**
- Whirly Bird
- Year-round activities
- Notes, examples, academic discussions

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INSTRUCTIONAL DESIGN FRAMEWORK

Standard
Evaluate the design of an experiment and make suggestions for reasonable improvements or extensions of an experiment.

The What
Design
Improvement of extensions

The How (DOK)
Evaluate
Make suggestions

Academic Vocabulary
Evaluate
Experimental design
Improvements
extensions

Kid Friendly Objective
- I will evaluate the design of an experiment.
- I will make suggestions for improvements and extensions of an experiment.

Assessment of Kid Friendly Objectives
- Students will evaluate the design of their experiment through a conclusion. (rubric)
- Students will make suggestions for improvements and extensions on their experiment in the conclusion. (rubric)

Activity
Pop Your Top Lab
Activity
Whirly Bird experiment
Activity
Observation Jars, colored water and salt water
**INSTRUCTIONAL DESIGN FRAMEWORK**

**SI1Ce**

---

**Standard**
Analyze whether evidence (data) and scientific principles support proposed explanations (hypotheses, laws, theories).

---

**The What**
Evidence (data) and scientific principles

---

**The How (DOK)**
Analyze

---

**Academic Vocabulary**
- Analyze
- Evidence (data)
- Scientific principles
- Support explanations

---

**Kid Friendly Objective**
- I will analyze if evidence (data) supports (agrees with) explanations (hypothesis, laws, theories).
- I will analyze if scientific principles supports explanations (hypothesis, laws, theories).

---

**Assessment of Kid Friendly Objectives**
Students will write a four paragraph conclusion from an experiment they performed.

---

**Activity**
Students will be given research data for a hypothesis, law, or theory. Student will analyze data and use data to evaluate their findings if it is supported or not.

---

**Activity**

---

**Activity**

---
INSTRUCTIONAL DESIGN FRAMEWORK

SI1Aa

**Standard**
Formulate testable questions and hypotheses.

**The What**
Testable questions and hypotheses

**The How (DOK)**
Formulate

**Academic Vocabulary**
- Formulate
- Testable questions
- Hypotheses
- Independent variable
- Dependent variable

**Kid Friendly Objective**
- I will formulate testable questions.
- I will formulate hypotheses.

**Assessment of Kid Friendly Objectives**
Students will create a testable question and write a hypothesis based on their testable question.

**Activity**
- Whirly Bird experiment
- Slow motion machine
- Observations Jars and Journals
INSTRUCTIONAL DESIGN FRAMEWORK

SI1Bc

Standard
Use a variety of tools and equipment to gather data (e.g., microscopes, thermometers, computers, spring scales, balances, metric rulers, graduated cylinders, stopwatches).

The What
Tools and equipment

The How (DOK)
Use

Academic Vocabulary
Tools
Thermometers
Magnets

Equipment
Computers
Metric rulers

Data
Spring scales
Graduated cylinders

Microscopes
Balances
Stopwatches

Kid Friendly Objective
I will use the appropriate tool/equipment to gather data.

Assessment of Kid Friendly Objectives
Students will use a variety of tools/equipment to gather data for various items.

Activity
Whirly Bird activity

Activity
Metric Mania

Activity
Plant and animal slides with microscopes

06/08/2009
Standard
Judge whether measurements and computation of quantities are reasonable.

The What
Measurements and computations

The How (DOK)
Judge

Academic Vocabulary
Judge
Computation
Measurements
Reasonable

Kid Friendly Objective
- I will judge if measurements are reasonable.
- I will judge if computations are reasonable.

Assessment of Kid Friendly Objectives
Students will judge if given a list of items and possible measurement what would be a reasonable measurement.

Activity
Metric mania

Activity
Film canister investigation

Activity
Metric mania
Powerpoint
ST2Bb

**Standard**
Describe explanations have changed over time as a result of new evidence.

**The What**
Explanations may change over time

**The How (DOK)**
Describe

**Academic Vocabulary**
Explanations (conclusions)
Evidence

**Kid Friendly Objective**
I will recognize how new evidence may change an explanation.

**Assessment of Kid Friendly Objectives**
1. Why was Alfred Wagner’s Theory of Continental Drift not accepted? Provide support from test.
2. What new evidence was discovered to support or confirm his theory? Provide support.
   OR
3. CR: How has atomic theory changed over time?

**Activity**
Continually in each strand, point out changes, discuss, notes, wonder

**Activity**
T-Chart
Explanations that have changed due to new evidence.

**Activity**
Journal: What explanations have changed over time as a result of new evidence
**INSTRUCTIONAL DESIGN FRAMEWORK**

**Standard**
Make qualitative observations using the five senses.

**The What**
Qualitative observations

**The How (DOK)**
Make

**Academic Vocabulary**
Qualitative Observations
Five senses

**Kid Friendly Objective**
I will make qualitative observations using my five senses.

**Assessment of Kid Friendly Objectives**
Students will be given a variety of substances and use appropriate senses to record qualitative observations.

- Activity
  Mystery box or mystery bags

- Activity
  Wafting Activity in lab

- Activity
  Journal activity, what is a qualitative observation?
INSTRUCTIONAL DESIGN FRAMEWORK

**Standard**
Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, force (weight) to the nearest Newton, temperature to the nearest degree Celsius, time to the nearest second.

**The What**
- Length
- Mass
- Volume
- Force
- Temperature
- Time

**The How (DOK)**
Measure

**Academic Vocabulary**
- Measure
- Length
- Mass
- Temperature
- Volume
- Weight
- Force
- Millimeter
- Time
- Gram
- Degree
- Milliliter
- Celsius
- Newton
- Second
- Measure

**Kid Friendly Objective**
- I will measure length to the nearest millimeter.
- I will measure mass to the nearest gram.
- I will measure volume to the nearest milliliter.
- I will measure temperature to the nearest degree Celsius.
- I will measure force (weight) to the nearest Newton.
- I will measure time to the nearest second.

**Assessment of Kid Friendly Objectives**
Students will measure length, mass, volume, temperature, force, and time in a variety of lab stations. (Needs to be done all year)

**Activity**
- Volume Lab
- Film canisters with different items
- Metric mania
ST3Ba

**Standard**
Describe ways in which science and society influence one another (e.g., scientific knowledge and the procedures used by scientists influence the way many individuals in society think about themselves, others, and the environment; societal challenges often inspire questions for scientific research, social priorities often influence research priorities through the availability of funding for research).

**The What**
Science and society influence one another

**The How (DOK)**
Describe

**Academic Vocabulary**
Influence

**Kid Friendly Objective**
I will describe ways in which science and society influence one another.

**Assessment of Kid Friendly Objectives**
- Explain the quote “Necessity is the mother of invention.”
- How do the demands of society (wanting new and better products and technology) influence science?
- Name some scientific inventions that have improved our lives.

**Activity**

**Activity**
Research

**Activity**
Journal: How has science influenced society? How has society influenced science? Give examples.

06/08/2009
INSTRUCTIONAL DESIGN FRAMEWORK

ST3Bb

Standard
Identify and evaluate the physical, social, economical and/or environmental problems that may be overcome using science and technology (e.g., the need for alternate fuels, human travel in space, AIDS).

The What
Physical, social, economic, environmental problems

The How (DOK)
Identify
Evaluate

Academic Vocabulary
Physical problems  Economic problems
Social problems   Environmental problems

Kid Friendly Objective
- I will identify environmental problems and evaluate how science and technology may be used to overcome the problems.
- I will identify physical problems and evaluate how science and technology may be used to overcome the problems.
- I will identify economic problems and evaluate how science and technology may be used to overcome the problems.
- I will identify social problems and evaluate how science and technology may be used to overcome the problems.

Assessment of Kid Friendly Objectives
- Students will identify a physical problem and evaluate how science and technology can be used to solve it. Include benefits and drawbacks.
- Students will identify an environmental problem and evaluate how science and technology can be used to solve it. Include benefits and drawbacks.
- Students will identify economic problems and evaluate how science and technology can be used to solve it. Include benefits and drawbacks.
- Students will identify social problems and evaluate how science and technology can be used to solve it. Include benefits and drawbacks.
Activity
Have groups discuss and write an evaluation of other groups solutions with pros and cons.

Activity
Research in groups Potential problems. Brainstorm possible solutions that use science / technology

Activity
Journal: What are some problems that science and technology may be used to solve the problem. Explain who or what does this problem affect.
INSTRUCTIONAL DESIGN FRAMEWORK

ST1B

Standard
Identify the link between technological developments and the scientific discoveries made possible through their development (e.g., Hubble telescope and stellar evolution, composition and structure of the universe; the electron microscope and cell organelles; sonar and the composition of the Earth; manned and unmanned space missions and space exploration; Doppler radar and weather conditions; MRI and CAT-scans and brain activity).

The What
Link between technological development and discovery

The How (DOK)
Identify

Academic Vocabulary
Invention
Discovery

Kid Friendly Objective
I will identify the link between invention and discovery.

Assessment of Kid Friendly Objectives
Students will identify the differences and advancements with microscopes and how this teaches us more about cells and atoms.

Activity
Research in pairs information about the examples, one example per pair. Students will then create a presentation of their choice to share with class.

Activity
Kagan: I have, who has

Activity
Journal:
1. What are examples of technology development
2. What are examples of scientific discoveries that have been made because of the technological development
ST1A

**Standard**
Explain how technological improvements, such as those developed for use in space exploration, the military, or medicine, have led to the invention of new products that may improve lives here on Earth (e.g., new materials, freeze-dried foods, infrared goggles, Velcro, satellite imagery, robotic, laser).

**The What**
Technological improvements

**The How (DOK)**
Explain

**Academic Vocabulary**
Invention
Technological advancement

**Kid Friendly Objective**
I will explain how technological improvements that are developed for one use may advance other positions of science as well.

**Assessment of Kid Friendly Objectives**
Students will make a collage of products that were invented due to technological improvements and explain each using a student created caption of how the tech improvement improved lives on Earth.

**Activity**
Mind Map
Space exploration, military, medicine with tech improvements

**Activity**
Students will do an Internet search to find new technology improvements. Record data and present to class.

**Activity**
Journal: what improvements in space exploration, the military, and medicine have made improvements in your life? Explain
INSTRUCTIONAL DESIGN FRAMEWORK

ST1C

**Standard**
Describe how technological solutions to problems (e.g., storm water runoff, fiber optics, windmills, efficient car design, electronic trains without conductors, sonar, robotics, Hubble telescope) can have both benefits and drawbacks (e.g., design constraints, unintended consequences, risks).

**The What**
Technological solutions have both benefits and drawbacks

**The How (DOK)**
Describe

**Academic Vocabulary**
Benefit
Cause and effect
Drawback

**Kid Friendly Objective**
I will describe how a technological solution to a problem may be both beneficial and detrimental.

**Assessment of Kid Friendly Objectives**
Students will choose an invention that was designed to solve a problem and describe its positive benefits and negative drawbacks.

**Activity**
Students will create a chart with technology solutions and research and record the benefits and drawbacks.

**Activity**
Journal: what are some technological solutions that have benefits and drawbacks. Explain

**Pair/Share then class discussion on technology solutions with benefits/drawbacks**
INSTRUCTIONAL DESIGN FRAMEWORK

Standard
Determine the appropriate tools and techniques to collect data.

The What
Tools and techniques

The How (DOK)
Determine

Academic Vocabulary
Determine
Collect data

Kid Friendly Objective
I will determine tools and technique to collect data.

Assessment of Kid Friendly Objectives
Students will determine what tools or techniques would be appropriate to collect specific data. (and given a variety of objects).

Activity
Mass/measurement lab (film canisters)

Activity
Graduated cylinders of volume

Activity
Journal: What different tools and techniques can a scientist (you) use to collect data
Recognize that different kinds of questions suggest different kinds of scientific investigations (e.g., some involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve making observations in nature; some involve discovery of new objects and phenomena; some involve making models).

The What
Different kinds of questions

The How (DOK)
Recognize

Academic Vocabulary
Questions  Scientific investigations  Observation
Description  Objects  Organisms
Events  Collecting specimens  Experiments
Experiments  Phenomena  Models

Kid Friendly Objective
I will recognize different kinds of questions lead to different types of investigations.

Assessment of Kid Friendly Objectives
Students will be given a variety of unknown questions or scenarios and must recognize the different type of investigation (test, research, demo, or mode.)

Activity
Throughout the year students will be involved with coming up with questions, creating models, demonstrations doing and creating experiments, observing.

Activity
Kagan
Inside Outside circle cards with different things to investigate. Students respond with best way to investigate, experiment model, demonstration,

Activity
Journal
What different kinds of questions can you ask to do scientific investigations.
INSTRUCTIONAL DESIGN FRAMEWORK

ES3Ac

**Standard**
Analyze the ways humans affect the erosion and deposition of soil and rock materials (e.g., clearing of land, planting of vegetation, paving land, construction of new buildings, building or removal of dams) and propose possible solutions.

**The What**
- Ways humans affect erosion and deposition
- Solutions

**The How (DOK)**
- Analyze
- Propose

**Academic Vocabulary**
- Affect
- Rock materials
- Dam
- Erosion
- Clearing
- Vegetation
- Deposition
- Propose
- Solutions
- Soil
- Paving

**Kid Friendly Objective**
- I will analyze ways humans affect erosion and deposition of soil and rock materials.
- I will propose possible solutions for human affects.

**Assessment of Kid Friendly Objectives**
- What do people do that causes erosion?
- What could people do to reduce erosion?

**Activity**
- Erosion tray, develop hypotheses, test, record data

**Activity**

**Activity**
- Media Tech, Claude Notes over what is presented with solutions using graphic organizer
INSTRUCTIONAL DESIGN FRAMEWORK

**Standard**
Identify matter is anything that has mass and volume.

**The What**
Matter had mass and volume

**The How (DOK)**
Identify

**Academic Vocabulary**
- Matter
- Mass
- Beaker
- Triple beam balance
- Balance scale
- Graduated cylinder
- Volume
- Identify
- Spring scale

**Kid Friendly Objective**
I will identify matter as anything with mass and volume.

**Assessment of Kid Friendly Objectives**
Students will classify a list of items as matter or nonmatter.

**Activity**
Concept attainment twenty slips of paper, ten matter/ten nonmatter. Classify in groups of three/four. Discuss results.

**Activity**
Journaling – Include operational definition for matter and explanation of matter.

**Activity**
Throw various items and have students catch them and identify as matter or nonmatter. (i.e., Styrofoam, rock, shoot air, water, love air cannon)
INSTRUCTIONAL DESIGN FRAMEWORK

ME1Ab

Standard
Describe and compare the volumes (the amount of space an object occupies) of objects or substances directly, using a graduated cylinder, and/or indirectly, using displacement methods.

The What
Volumes of objects/substances using a graduated cylinder or using displacement methods.

The How (DOK)
• Describe
• Compare

Kid Friendly Objective
• I will describe the volumes of objects or substances using a graduated cylinder, and/or using displacement methods.
• I will compare the volumes of objects or substances using a graduated cylinder, and/or using displacement methods.

Academic Vocabulary
Describe
Graduated cylinder
Compare
Displacement method
Substances
Meniscus

Assessment of Kid Friendly Objectives
Students will measure, record, and describe various volumes of objects and substances using a graduated cylinder or displacement method and then compare their findings.
OR
Students will be given pictures of various graduated cylinders measurements/displacements and they will record measurement and compare findings. (may use multiple choice)

Activity
Lab discovery: Place various items and substances and graduated cylinders out, have students work/discuss how to find a measurement.

Activity
Lab activity: Variety of items to find volume. Students will record volumes then compare finds in pairs or threes. Discuss comparisons, look for similarities/differences.

Activity
Journal:
Prompt; How do you determine the volume of matter? How do you read a graduated cylinder? What did you find as you compared volumes?
INSTRUCTIONAL DESIGN FRAMEWORK

ME1Ac

Standard
Describe and compare the masses (amounts of matter) of objects to the nearest gram using a balance.

The What
The masses of objects

The How (DOK)
Describe
Compare

Kid Friendly Objective
• I will describe the masses of objects to the nearest gram using a balance.
• I will compare the masses of objects to the nearest gram using a balance.

Academic Vocabulary
Describe
Gram
Triple beam balance
Compare
Balance
Masses
Mass

Assessment of Kid Friendly Objectives
Students will be given pictures of various scales measuring masses of different matter and they will record the measurements and compare findings or give multiple choice options.

Activity
- give students balance scales, various items masses. Allow students to discuss how to use scales to determine masses. Discuss accuracy after time to discover.

Activity
- Students work in pairs/threes to find masses, record and then compare their findings. Discuss. Look for similarities/differences.

Activity
- What is mass? How do you determine the mass of an object? How do you use/read a scale?
Classify the types of matter in an object into pure substances or mixtures using their specific physical properties.

**The What**
Types of matter

**The How (DOK)**
Classify

**Academic Vocabulary**
- Classify
- Mixtures
- Filter
- Matter
- Sort
- Magnetism
- Pure substances
- Physical properties
- Evaporation

**Kid Friendly Objective**
I will classify matter into pure substances or mixtures using physical properties.

**Assessment of Kid Friendly Objectives**
Students will be given a list/pictures of pure substances and mixtures and use a T-chart to classify them based on their physical properties.

**Activity**
Variety of pure substances and mixtures, students classify into two categories using physical properties. Discuss how come to idea.

**Activity**
Turtle game, see directions. Pictures/actual/words for examples record if example is pure substance/mixture

**Activity**
- What is a pure substance? Mixture?
- What are some examples of each?
- What are the physical properties of a substance? Mixture?
INSTRUCTIONAL DESIGN FRAMEWORK

ME1Ba

Standard
Describe the properties of each component in a mixture/solution and their distinguishing properties (e.g., salt water, oil and vinegar, pond water, Kool-Aid).

The What
Properties of a mixture/solution

The How (DOK)
Describe

Academic Vocabulary
Describe Properties Component
Mixture Solution Distinguishing properties

Kid Friendly Objective
I will describe the properties of each component in a mixture/solution.

Assessment of Kid Friendly Objectives
Students will compare and contrast the properties of mixtures and solutions and describe their findings: salt water, oil/vinegar, pond water, Kool-Aid.

Activity
• Lectures Burst Notes on mixture/solution and properties.

Activity
Paper Pass Slips:
• Distinguishing properties of mixtures
• Distinguishing properties of solutions.
• Similar properties of mixtures

Activity
• What are the distinguishing properties of a mixture?
• What are the distinguishing properties of a solution?
• What are the similar properties of mixtures and solutions?
INSTRUCTIONAL DESIGN FRAMEWORK

**Standard**
Describe appropriate ways to separate the components of different types of mixtures (sorting, evaporation, filtration, magnets, boiling, chromatography, screening).

**The What**
Appropriate ways to separate the components

**The How (DOK)**
Describe

**Academic Vocabulary**
- Describe
- Separate
- Components
- Mixtures
- Sorting
- Evaporation
- Filtration
- Magnets
- Boiling
- Chromatography

**Kid Friendly Objective**
I will describe ways to separate the components of different types of mixtures.

**Assessment of Kid Friendly Objectives**
Students will be given various mixtures and describe the process they can use to separate the mixtures
OR
Give multiple choice questions
OR
Choose a mixture and explain how to separate its components.

**Activity**
Ways to separate different types of mixtures.

**Activity**
Create mind map for ways to separate various mixtures.

**Activity**
Various mixtures and provide all ways to separate.
**INSTRUCTIONAL DESIGN FRAMEWORK**

**Standard**
Predict how various solids (soluble/insoluble) behave (e.g., dissolve, settle, float) when mixed with water.

**The What**
How various solids behave

**The How (DOK)**
Predict

**Academic Vocabulary**
- Predict
- Insoluble
- Float
- Soluble
- Dissolve
- Settle

**Kid Friendly Objective**
- I will predict how soluble solids behave when mixed with water.
- I will predict how insoluble solids behave when mixed with water.

**Assessment of Kid Friendly Objectives**
Students will be shown various solids (soluble/insoluble) and predict how they will behave when mixed with water. They will provide support for their prediction OR Predict if the solid is soluble or insoluble when mixed with water. explain why you made the prediction you did.

**Activity**
Students will have various examples of soluble/insoluble solids. Predict what will happen, test and record for each solid. In small groups students will then analyze data and make conclusions.

**Activity**
Make mini-poster with both soluble/insoluble. Include terms: dissolve, settle, float, soluble,

**Activity**
Students will work in groups to make a Flow Diagram
- Solids
- Dissolve
- Settle
- Float

- Soluble
- Insoluble
- Settle
- Float

06/08/2009
ME1Ga

**Standard**
Identify and classify changes in matter as chemical and/or physical.

**The What**
Changes in matter

**The How (DOK)**
Identify
Classify

**Academic Vocabulary**
Identify
Matter
Classify
Physical changes
Changes
Chemical changes

**Kid Friendly Objective**
- I will classify changes in matter.
- I will identify if the change is a chemical or physical change.

**Assessment of Kid Friendly Objectives**
Students will be given various examples of changes in matter. They will classify if the change is physical or chemical OR Use a T-chart to classify the following changes in matter.

**Activity**
Demo with observation. Have different groups take measurements of different item to be used. Students will record change observations with changes. Students think/pair/share ideas of similarities/differences to develop conclusions.

**Activity**
Two Box-induction all possible rules. See directions.

**Activity**
- What are examples of physical changes?
- What are chemical changes?
- What is the difference between chemical/physical changes?
INSTRUCTIONAL DESIGN FRAMEWORK

**Standard**
Identify chemical changes (i.e., rusting, oxidation, burning, decomposition by acids, decaying, baking) in common objects (i.e., rocks such as limestone, minerals, wood, steel wool, plants) as a result of interactions with sources of energy or other matter that form new substances with different characteristic properties.

**The What**
Chemical changes

**The How (DOK)**
Identify

**Academic Vocabulary**
- Chemical change
- Burning
- Characteristics
- Rusting
- Oxidation
- Decomposition
- Substance

**Kid Friendly Objective**
I will identify the chemical changes that occur in common objects when forming new substances with different characteristic properties.

**Assessment of Kid Friendly Objectives**
Students will be given pictures or words that are different examples of chemical changes. They will determine the cause (chemical change: rusting, oxidation, burning, decomposition by acids, decaying baking) and the effect new substance with different characteristic properties

OR

Determine the cause of the chemical change. Explain the effect of the chemical change and include properties before and after.

**Activity**
- Different stations set up with different chemical changes. Observation magnifying glasses. Draw label measurements.
- United Streaming or short video with brief note taking
- What are examples of different chemical changes?
- What happens to substance after a chemical change?
INSTRUCTIONAL DESIGN FRAMEWORK

**Standard**
Identify physical changes in common objects (e.g., rocks, minerals, wood, water, steel wool, plants) and describe the processes which caused the change (e.g., weathering, erosion, cutting, dissolving).

**The What**
Physical changes

**The How (DOK)**
Identify
Describe

**Academic Vocabulary**

| Identify | Physical changes
| Erosion | Cutting
| Minerals | Processes
| Weathering | Dissolving

**Kid Friendly Objective**
- I will identify the physical changes in common objects.
- I will describe the process which caused the change.

**Assessment of Kid Friendly Objectives**
Students will be given pictures of physical changes and students will describe the change and describe the cause of the change (weathering, erosion, cutting, dissolving).

**Activity**
Mind MAP Partner. Rock, minerals, wood, water, steel wool, plants, think and include all possible physical change.

**Activity**
Observe and record chemical changes of various objects; cola and penny, steel wool and water, baking soda and cabbage

**Activity**
- What is a physical change?
- What are possible causes of physical changes?
- What has changed about the object after the change?
INSTRUCTIONAL DESIGN FRAMEWORK

ME11

**Standard**
Demonstrate and provide evidence that mass is conserved during a physical change.

**The What**
Evidence that mass is conserved

**The How (DOK)**
Demonstrate and provide

**Academic Vocabulary**
Demonstrate  Evidence  Mass
Conserved  Physical change

**Kid Friendly Objective**
• I will demonstrate that mass is conserved during a physical change.
• I will provide evidence that mass is conserved during a physical change.

**Assessment of Kid Friendly Objectives**
Students will be given examples of physical changes and cite evidence for proof that mass is conserved.

**Activity**
Dry ice Balloon and ruler activity

**Activity**
Create a story board/comic strip that shows the concept that mass is conserved. Use the following vocabulary: mass, physical change, conserved, evidence, measurement.

**Activity**
• What does the word “conserved” mean?
• Use it in a sentence.
• What does it mean to say “mass is conserved”?
INSTRUCTIONAL DESIGN FRAMEWORK

**Standard**
Recognize and apply the fact that energy from the Sun is the source of almost all energy used to produce the food for living organisms.

**The What**
Energy from the sun

**The How (DOK)**
- Recognize
- Apply

**Academic Vocabulary**
- Energy
- Source
- Produce
- Recognize
- Living organisms

**Kid Friendly Objective**
- I will recognize that energy from the Sun is the source of almost all energy.
- I will apply the fact that the Sun’s energy is the source of almost all energy used to produce food for living organisms.

**Assessment of Kid Friendly Objectives**
Students will make observations to show that the sun’s energy is the source of almost all energy and use that fact to tell how the Sun’s energy is used to produce food for living organisms.

**Activity**
- Pairs
  - Flow chart
    - Start with item that consumes energy, then trace back where energy comes from, either known or research. Share class discussion/conclusions.

**Activity**
- Individual collage, label each source, include one-half food for living organisms.

**Activity**
- How do we get energy?
- What is the main source of almost all energy?
INSTRUCTIONAL DESIGN FRAMEWORK

**ME2Ca**

**Standard**
Recognize and describe how energy from the Sun is transferred to Earth in a range of wavelengths and energy levels, including visible light, infrared radiation, and ultraviolet radiation.

**The What**
- Energy transfer from Sun to Earth

**The How (DOK)**
- Recognize
- Describe

**Academic Vocabulary**
- Energy
- Visible light
- Transferred
- Infrared radiation
- Wavelengths
- Ultraviolet radiation

**Kid Friendly Objective**
- I will recognize the Sun’s energy is transferred to Earth in a range of wavelengths and energy levels.
- I will describe how energy from the Sun is transferred to Earth

**Assessment of Kid Friendly Objectives**
- Students will draw how the Sun’s energy transfers to Earth including a range of wavelengths and energy levels, include visible light, infrared radiation, and ultraviolet radiation. Students will include a caption that describes their picture.

**Activity**
- Small Group concept attainment. Show different examples. Give different parts of wavelength have them put them together how they think they should go. Include labels to put with energy levels. Include pictures of examples.

**Activity**
- Powerpoint/Notebook include ten slides showing information about both objectives

**Activity**
- How does the Sun’s energy reach the Earth?
- What is visible light?

**Activity**
- You are a science text illustrator. You need to draw a diagram that shows how the Sun’s energy is transferred to Earth. Include wavelengths and energy levels, visible light, infrared, radiation and ultraviolet radiation. Include a caption that describes the diagram.
**Standard**
Identify sources of visible light (e.g., the Sun and other stars, flint, bulb, flames lightning).

**The What**
Sources of visible light

**The How (DOK)**
Identify

**Academic Vocabulary**
Identify Sources, Star, Flint, Lightning, Visible light

**Kid Friendly Objective**
I will identify sources of visible light.

**Assessment of Kid Friendly Objectives**
Give students different multiple choice questions with visible light sources and non-visible light sources. Include a question which is not an example of visible light.

**Activity**
Laminated pictures; visible, non-visible, light, classify

**Activity**
Design lighting for a house. May be on paper or 3-D. All must be labeled with explanation. Include Sun, stars, flint, bulb, flames, lightning, straight line, ray box, pinhole viewer laser pointer, etc.

**Activity**
• Give as many examples of visible light as you can.
• What’s the difference between visible and non-visible light?
INSTRUCTIONAL DESIGN FRAMEWORK

ME2Ab

Standard
Describe evidence (i.e., cannot bend around walls) that visible light travels in a straight line, using the appropriate tools (i.e. pinhole viewer, ray box, laser pointer).

The What
Visible light travels in a straight line

The How (DOK)
Describe

Academic Vocabulary
Visible light  Straight line  Describe
Pinhole viewer  Ray box  Appropriate
Evidence  Laser pointer

Kid Friendly Objective
I will describe evidence that visible light travels in a straight line.

Assessment of Kid Friendly Objectives
Student will give evidence in a CR of how light travels in a straight line.
CR: Light travels in a straight line. Give evidence of how you know this is true.
CR: What tools would you use to prove this statement is true.

Activity
Light with mirrors and lasers to travel around room, pinhole viewer different ways to show light.

Activity
Song/Rap about visible light traveling in straight line, use evidence, in song include tools.

Activity
• How does light travel?
• How can you prove your idea?
INSTRUCTIONAL DESIGN FRAMEWORK

ME2Ac

**Standard**
Compare the reflection of visible light by various surfaces (i.e., mirror, smooth and rough surfaces, shiny and dull surfaces, Moon).

**The What**
Reflection of visible light

**The How (DOK)**
Compare

**Academic Vocabulary**
- Compare
- Reflection
- Various
- Visible light
- Surfaces
- Mirror
- Smooth
- Rough
- Shiny
- Dull

**Kid Friendly Objective**
I will compare the reflection of visible light by various surfaces.

**Assessment of Kid Friendly Objectives**
Student will use a light source to test, observe, record the reflection of light on various surfaces. Students will reach a conclusion based on their findings.

**Activity**
Students will have available various surfaces and a light source to test the surface. Observe (include location of object), record, analyze, conclude.

**Activity**
Create a gam with questions that include objective: light reflection or various surfaces

**Activity**
- Use arrows to show how light reflects off of: mirror, smooth/rough, shiny/dull, moon
INSTRUCTIONAL DESIGN FRAMEWORK

**The What**

Refraction of visible light

**The How (DOK)**

Compare

**Academic Vocabulary**

- Compare
- Refraction
- Transparent
- Visible light
- Translucent
- Prism
- Concave lens
- Convex lens

**Kid Friendly Objective**

I will compare the refraction of visible light going through different materials.

**Assessment of Kid Friendly Objectives**

Students will explain the cause/effect of the refraction of visible light passing through transparent materials and translucent materials.

**Activity**

- Students have various transparent materials and translucent materials (example: Hypothesize what will happen when light passes through the materials)
- Students will investigate and then reflect in journal

**Activity**

- Create a foldable with six different materials with drawing of how the light refracts

**Activity**

- What is a transparent material?
- What is a translucent material?
INSTRUCTIONAL DESIGN FRAMEWORK

ME2Ae

Standard
Predict how different surfaces (transparent, translucent, opaque) and lenses (convex, concave) affect the behavior of visible light rays and the resulting image of an object.

The What
Behavior of visible light

The How (DOK)
Predict

Academic Vocabulary
Predict Surfaces Lenses
Visible light rays Affect Behavior
Resulting Image

Kid Friendly Objective
• I will predict how different surfaces affect the behavior of visible light rays and their image.
• I will predict how different lenses affect the behavior of visible light rays and their image.

Assessment of Kid Friendly Objectives
Students will be given new items (transparent, translucent, opaque, and lenses). Students will predict how visible light will behave and the resulting image of an object. Students will cite evidence for their prediction and draw a diagram showing the light waves and the image.

Activity
Students will work in teams to create one of the following: notebook interactive Powerpoint, Jeopardy game

Activity
Students will investigate how visible light rays behave on different surfaces and record their observations

Activity
• What is opaque?
• What is a convex lens?
• What is a concave lens?
INSTRUCTIONAL DESIGN FRAMEWORK

ME2Af

Standard
Identify receivers of visible light energy (e.g., eye, photocell)

The What
Receivers of visible light

The How (DOK)
Identify

Academic Vocabulary
Identify
Receivers
Visible light rays
Photocell

Kid Friendly Objective
I will identify the receivers of visible light energy.

Assessment of Kid Friendly Objectives
Students will tell what can receive visible light energy.
Question: What receives visible light energy? Give as many examples as possible.

Activity
Students will research receivers of light and write a paragraph with illustrations to display their findings

Activity
House
Include use of photocell

Activity
What receives visible light?
Standard
Recognize and explain that an object is “seen” only when the object emits or reflects light to the eye.

The What
That and object is “seen”

The How (DOK)
Recognize
Explain

Academic Vocabulary
Recognize
Explain
Emits
Reflects
Object
Light

Kid Friendly Objective
• I will recognize that an object is “seen” only when the object emits or reflects light to the eye.
• I will explain that an object is “seen” only when the object emits or reflects light to their eye.

Assessment of Kid Friendly Objectives
If there were no longer any light source, what would you be able to see? Explain your answer.

Activity
Investigation
Dark room
What can you see? Use light emitting object, then use light reflecting object. Record observations each time.

Activity
Create an instruction card on how to be able to see an object
OR
Create a mime sketch on how to be able to see an object. Use a story board to record.

Activity
Journal: Explain what makes it possible to see an object

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Recognize difference in wavelength and energy levels within that range of visible light that can be seen by the human eye are perceived as differences in color.

The What
Differences in wavelengths and energy levels

The How (DOK)
Recognize

Academic Vocabulary
Recognize Differences Range
Wavelengths Energy levels Color
Visible light Perceived

Kid Friendly Objective
I will recognize how differences in wavelengths and energy levels are perceived as different colors.

Assessment of Kid Friendly Objectives
What do you know about rainbows and why they appear?

Activity
Compare/contrast wavelengths and energy levels.

Activity
White light put together/take apart

Activity
• Why do we see different colors
• An object that reflects the long wavelength is what color?
Standard
Describe how sound energy is transferred by wave-like disturbances that spread away from the source through a medium.

The What
Sound energy transference

The How (DOK)
Describe

Academic Vocabulary
Describe Sound energy Transferred
Wave-like disturbances Source Medium

Kid Friendly Objective
I will describe how sound energy is transferred through a medium.

Assessment of Kid Friendly Objectives
Students will be given examples of various mediums (i.e., water, concrete wall, air). Students will describe how the sound waves travel through the medium.

Activity
Sound waves using Slinkies, tuning forks.

Activity
Scavenger hunt, find something you can use to demonstrate how sound is transferred. Bring in and demonstrate.

Activity
- How does sound travel?
- Does it travel the same through everything?
Standard
Describe how changes in energy cause changes in loudness and pitch of a sound.

The What
Changes in energy

The How (DOK)
Describe

Academic Vocabulary
Describe
Energy
Pitch
Loudness
Sound

Kid Friendly Objective
• I will describe how changes in energy cause changes in loudness.
• I will describe how changes in energy cause changes in pitch.

Assessment of Kid Friendly Objectives
• Students will be given a prompt and they will argue the position given.
• Your best friend says energy does not cause changes in loudness and pitch. You disagree. Defend your position.

Activity
Experiment with changing loudness and pitch. What will change the loudness, what will change the pitch?

Activity
What could you invent to add energy to change loudness? Pitch?

Activity
What is loudness of a sound?
What is pitch?
How could you change loudness? Pitch?
Standard
Predict how the properties of the medium (e.g., air, water, empty space, rock) affect the speed of different types of mechanical waves (i.e., earthquake, sound).

The What
Properties of the medium affect mechanical waves.

The How (DOK)
Predict

Academic Vocabulary
Predict          Properties          Medium
Mechanical waves Affect          Speed
Empty space      Earthquake        Sound

Kid Friendly Objective
I will predict how the properties of the medium affect the speed of mechanical waves.

Assessment of Kid Friendly Objectives
Students will be given a CR.
CR: A bell rang. You are the sound wave. Explain what happens to you as you travel out of the classroom, through the wall and the glass window through the air and out of the atmosphere.
CR: Explain how geologists use earthquake waves to determine what the composition of the earth is. Use examples.

Activity
Students will investigate with various items and record observations of what they find. Research how waves in earthquakes travel. Other mechanical waves

Activity
Students will create a lab test to investigate speed of sound. Students will develop question, materials, procedures and carry out

Activity
Journal: Does sound always travel at the same speed? Explain your answer

INSTRUCTIONAL DESIGN FRAMEWORK
**Standard**
Describe the common life processes necessary to the survival of organisms (i.e., growth, reproduction, life span, response to stimuli, energy use, exchange of gases, use of water, elimination of waste).

**The What**
Common life processes

**The How (DOK)**
Describe

**Academic Vocabulary**
- Describe
- Common life processes
- Response to stimuli
- Elimination of waste
- Survival
- Life span
- Energy use
- Exchange of gases
- Growth
- Use of water
- Reproduction

**Kid Friendly Objective**
I will describe the common life processes needed for organisms to survive.

**Assessment of Kid Friendly Objectives**
Students will create a Venn diagram to compare life processes of living things (a dog) and non-living things (a car).

**Activity**
- Give teams cards with each process. Discuss what they think each means. Discuss why they go together. Discuss how they relate to: a flower, a fish, a bear

**Activity**
- Create a foldable to show each aspect of the life processes

**Activity**
- Journal: What things are necessary for an oak tree, house fly and you to live? How are you similar/different from a refrigerator?
Recognize all organisms are composed of cells, the fundamental units of life, which carry on all life processes.

**Kid Friendly Objective**
I will recognize all organisms are composed of cells that carry on all life processes.

**Assessment of Kid Friendly Objectives**
Students will list items made of cells and not made of cells. Which of these items are composed of cells? Students will tell how they decided which of these items are composed of cells or they will classify the items into two categories and explain why they classified them the way they did. They will explain why they decided which of these items are made of cells.

**Academic Vocabulary**
- Recognize
- Organisms
- Cells
- Composed
- Life processes
- Life
- Fundamental units

**Activity**
- Students research: What life processes do cells carry out?
- Grow, reproduce, have a life span, respond to stimuli, use energy, exchange gases, use water, eliminate waste

**Activity**
- Microscope Activity: Students observe and draw diagrams of the different items observed. Compare/contrast with partner

**Activity**
- Journal: What one item do ALL living things have in common
LO1Ea

**Standard**
Recognize most of the organisms on Earth are unicellular (e.g., bacteria, protists) and other organisms, including humans, are multicellular.

**The What**
Multicellular, unicellular organism

**The How (DOK)**
Recognize

**Academic Vocabulary**
Organisms
- Unicellular
- Multicellular

Bacteria
- Protists
- Recognize

**Kid Friendly Objective**
I will recognize most organisms are unicellular and other organisms are multicellular.

**Assessment of Kid Friendly Objectives**
- How are multicellular and uni-cellular organisms alike? Different?
- Are there more multi-cellular or uni-cellular organisms? Provide support for your answer.
- Research data for number of unicellular and multicellular organisms. Create graph to share findings

**Activity**
Concept Attainment:
give students diagrams/pictures of uni and multi-cellular organisms. Compare/contrast teams. Classify organisms, include explanation of choices

**Activity**
Microscope Activity:
students view and observe multicellular and unicellular samples.

**Activity**
Journal: Are there more unicellular or multicellular organisms on Earth?
Standard
Identify examples of unicellular (e.g., bacteria, some protists, fungi) and multicellular organisms (e.g., some fungi, plants, animals).

The What
Unicellular and multicellular organisms

The How (DOK)
Identify

Academic Vocabulary
Unicellular, Multicellular
Protists Fungi
Animals Plants

Kid Friendly Objective
I will identify if an organism is multicellular or unicellular.

Assessment of Kid Friendly Objectives
- Write an operational definition for multi-cellular and unicellular organisms.
- Classify the following examples as unicellular or multicellular.
  List:

Activity
Create a brochure for organisms; multicellular and unicellular

Activity
Examine Slide examples of both unicellular and multicellular organisms.

Activity
Journal: What is a unicellular organism? What is a multicellular organism? Give two examples
Standard

Compare and contrast the following plant and animal cell structures: cell membrane, nucleus, cell wall, chloroplast, and cytoplasm.

The What

Plant and animal cell structure

The How (DOK)

Compare
Contrast

Compare
Plant
Animal
Cell membrane
Cell
Chloroplast
Cytoplasm
Nucleus
Cell Wall

Academic Vocabulary

Kid Friendly Objective

I will compare and contrast plant and animal cell structures.

Assessment of Kid Friendly Objectives

Create a Venn diagram that compares and contrasts plant and animal cell structures: cell membrane, nucleus, cell wall, chloroplast, cytoplasm. Include explanation

Activity

Cell Menu
Students create menu items with cell organelles. Each item will look like original organelle. Include descriptions with reference to job of organelles.

Activity

Students watch various media presentations and take notes over plant and animal cells. Notes may be in any style

Activity

Journal: Draw a picture of a plant cell and animal cell and label the parts. Include a caption to explain what each organelle does.
**Standard**
Recognize the chloroplast as the cell structure where food is produced in plants and some unicellular organisms (e.g., algae, some protists).

**The What**
Chloroplast

**The How (DOK)**
Recognize

**Academic Vocabulary**
- Chloroplast
- Cell structure
- Produced
- Plants
- Unicellular organisms

**Kid Friendly Objective**
I will recognize chloroplasts make food in the plant cell and some unicellular organisms.

**Assessment of Kid Friendly Objectives**
- What is a chloroplast? What organisms contain chloroplasts?
- Explain how your life would change if you had chloroplasts. Support your answer.
- Which organelle produces food in plants? a) cytoplasm  b) mitochondria  c) chloroplast d) nucleus

**Activity**
Students will create a diagram for science textbook with caption

**Activity**
Students will create a flow chart to show the photosynthesis process

**Activity**
Journal: What is a chloroplast? explain how it works
Standard
Describe how plants use energy from the Sun to produce food and oxygen through the process of photosynthesis.

The What
How plants use energy from the Sun

The How (DOK)
Describe

Academic Vocabulary
Describe Plants Energy
Produce Food Oxygen
Process Photosynthesis

Kid Friendly Objective
I will describe how plants use energy from the Sun to produce food and oxygen through the process of photosynthesis.

Assessment of Kid Friendly Objectives
• Explain how the process of photosynthesis works?
• What do plants produce during photosynthesis?

Activity
Students, in teams or pairs will create a song explaining photosynthesis

Activity
Students will take notes from multiple resources that explain the process of photosynthesis

Activity
Journal: Explain the process of photosynthesis
Standard
Identify the biotic factors (populations of organisms) and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition) that make up an ecosystem.

The What
Biotic factors and abiotic factors

The How (DOK)
Identify

Academic Vocabulary
Biotic factors  Abiotic factors  Ecosystem
Identify  Factor  Populations
Community  Soil composition  Quantity
Range

Kid Friendly Objective
I will identify the biotic factors and abiotic factors that make up an ecosystem.

Assessment of Kid Friendly Objectives
- Categorize the following as abiotic or biotic factors.
- Explain how abiotic and biotic factors are alike? Different?

Activity
Word study
Meaning of “Bio”

Activity
Mini Posters:
Biotic Factors
Abiotic Factors

Activity
Journal:
What is a biotic factor?
What is an abiotic factor?

INSTRUCTIONAL DESIGN FRAMEWORK
**Standard**
Identify populations within a community that are in competition with one another for resources.

**The What**
Populations in competition

**The How (DOK)**
Identify

**Academic Vocabulary**
- Populations
- Community
- Resources
- Identify
- Compete

**Kid Friendly Objective**
I will identify populations that compete with each other for resources in a community.

**Assessment of Kid Friendly Objectives**
Students will be given a picture of a community. Distinguish which populations compete with each other for resources. Include the resource they are competing for.

**Activity**
Pictures of different populations. Students will discuss ways they may compete and for what.

**Activity**
Notes: Visual of how different populations compete

**Activity**
Journal: What organisms do we compete with for food? Shelter?
Standard
Identify the factors that affect the number and types of organisms of ecosystem can support (e.g., food availability, abiotic factors such as quantity of light and water, temperature and temperature range, soil composition, disease, competitions from other organisms, predation).

The What
Factors that affect organisms

The How (DOK)
Identify

Academic Vocabulary
Factors
Quantity of light
Disease
Identify

Types
Quantity of water
Competitions

Organism
Temperature range
Predation

Ecosystem
Soil composition
Support

Kid Friendly Objective
• I will identify the factors that affect how many organisms an ecosystem can support.
• I will identify the factors that affect the types of organisms an ecosystem can support.

Assessment of Kid Friendly Objectives
• Students will be given a picture of an ecosystem.
• Students will identify and explain the factors that affect how many organisms an ecosystem can support.
• Students will identify and explain the factors that affect the types of organisms an ecosystem can support.

Activity
Com. Lab
On-line activity

Activity
Students will research different ecosystems and record factors that limit organisms.

Activity
Journal: what factors affect how many organisms an ecosystem can support? What factors can affect the type of organism an ecosystem can support?
Standard
Predict the possible effects of changes in the number and types of organisms in an ecosystem on the populations of other organisms within that ecosystem.

The What
Possible effects of changes of organisms on other organisms

The How (DOK)
Predict

Academic Vocabulary
Types of organisms  Ecosystem  Effects
Energy Pyramid  Populations  Food chain
Food web  Producers  Consumers
Decomposers  Scavengers  Predict

Kid Friendly Objective
• I will predict the possible effects of changes in the number of organisms in an ecosystem on the populations of other organisms.
• I will predict the possible effects of changes in the types of organisms in an ecosystem on the populations of other organisms.

Assessment of Kid Friendly Objectives
Students will predict what will happen if the number of wolves increase. They will explain what type organisms this will affect and why.

Activity
Create food chains and food webs

Activity
Journal: if for some reason all the oak trees died, how would that affect other organisms?

Activity
On line activity with Energy pyramid where students can change number and type of organisms. Students will record data

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Describe beneficial and harmful activities or organisms, including humans (e.g., deforestation, overpopulation, water and air pollution, global warming, restoration of natural environments, river bank/coastal stabilization, recycling, channelization, reintroduction of species, depletion of resources), and explain how these activities affect organisms within an ecosystem.

The What
• Beneficial and harmful activities
• Affect on organisms

The How (DOK)
• Describe
• Distinguish
• Explain

Academic Vocabulary
Beneficial Beneficial Activities  Harmful Activities  Organisms  Deforestation
Recycling  Over population  Water pollution  Channelization  Greenhouse effect
Describe  Air pollution  Global warming  Explain  Greenhouse gases
Reintroduction of species  Restoration of natural environments
Depletion of resources  Riverbank /coastal stabilization

Kid Friendly Objective
• Describe beneficial activities or organisms, including humans, and explain how these activities affect organisms within an ecosystem.
• Describe harmful activities or organisms, including human and explain how these activities affect organisms within an ecosystem.

Assessment of Kid Friendly Objectives
• Students will choose a beneficial activity or organisms and explain how it affects organisms in an ecosystem.
• Students will choose a harmful activity or organisms and explain how it affects organisms in an ecosystem.

Activity
Debate with teams using harmful/beneficial activities organism

Activity
Students will research and create a way to share their information with other teams using examples

Activity
Journal: What are examples of beneficial activities/organisms harmful activities

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Predict the impact (beneficial or harmful) of a natural environmental change (e.g., forest fire, flood, volcanic eruption, avalanche) on the organisms in an ecosystem.

The What
The impact of a natural environmental change

The How (DOK)
Predict

Academic Vocabulary
Impact | Beneficial | Harmful | Forest fire
---|---|---|---
Flood | Volcanic eruption | Avalanche | Organism
Ecosystem | Hurricane | Tornado | Earthquake
Predict | Natural environmental change |

Kid Friendly Objective
I will predict the impact of a natural environmental change on the organisms in an ecosystem.

Assessment of Kid Friendly Objectives
- How does a forest fire help and harm the ecosystem?
- How does a flood help and harm the ecosystem?
- How does a volcanic eruption help and harm the ecosystem?
- How does an avalanche help and harm the ecosystem?

Activity
Create a picture book with native environmental changes and how it may affect organisms

Activity
Teams will brainstorm and then record examples of natural environmental changes

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Describe possible solutions to potentially harmful environmental changes within an ecosystem.

The What
Possible solutions

The How (DOK)
Describe

Academic Vocabulary
Solutions  Potentially  Harmful
Environmental changes  Ecosystem

Kid Friendly Objective
I will describe possible solutions to potentially harmful environmental changes in an ecosystem.

Assessment of Kid Friendly Objectives
Make a list of five ways that people can harm the environment. For each harmful change, describe a way that harmful effect could have been avoided or lessened.

Activity
Students will watch various media presentations of harmful environmental changes. Teams will brainstorm solutions and present solutions as a persuasive speech.

Activity
Kagan: Students will list various environmental changes on paper. Students will write possible solutions and put back in mix.

Activity
Journal: students will write what possible harmful environmental changes they can think of, and possible solutions can for them.
Standard
Diagram and describe the transfer of energy in an aquatic food web and a land food web with reference to producers, consumers, decomposers, scavengers, and predator/prey relationships.

The What
The transfer of energy

The How (DOK)
Diagram
Describe

Academic Vocabulary
Aquatic
Consumers
Prey
Food web
Decomposers
Diagram
Producers
Scavengers
Describe
Energy transfer
Predators

Kid Friendly Objective
• I will diagram the transfer of energy in an aquatic food web and a land web including producers, consumers, decomposers, scavengers, and predator/prey relationships.
• I will describe the transfer of energy in an aquatic food web and a land web including producers, consumers, decomposers, scavengers, and predator/prey relationships.

Assessment of Kid Friendly Objectives
Students will create a diagram showing the transfer of energy in an aquatic food web and a land food web. The diagram should include scavengers, consumers, decomposers and producers. They will write a description explaining each food web, label any predator/prey relationships and include them in their description.

Activity
Students will work with a partner to create a children’s book, modeled after the story _______. This is the _____ that ______ the ______

Activity
In teams students will choose aquatic and land animals and research their food webs

Activity
Journal: Draw an aquatic food web and label. Draw and label land food web

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Classify populations of unicellular and multicellular organisms as producers, consumers, and decomposers by the role they serve in the ecosystem.

The What
Populations of unicellular and multicellular organisms.

The How (DOK)
Classify

Academic Vocabulary
- Populations
- Unicellular organisms
- Consumers
- Unicellular organisms
- Decomposers
- Role
- Producers
- Consumers
- Ecosystem

Kid Friendly Objective
I will classify populations of unicellular and multicellular organisms as producers, consumers, and decomposers.

Assessment of Kid Friendly Objectives
Students will create a food chain and label the unicellular, multicellular organisms as well as the producers, consumers, and decomposers.

Activity
Students will create a mini-poster with an energy pyramid for unicellular/multicellular organisms

Activity
In Think, Pair, Share students will be given a variety of food webs and determine what is a producer, consumer, and decomposer

Activity
Students will be given word cards and will discuss in teams any possible relationships (producers, consumers, decomposers)
Standard
Identify fossils as evidence some types of organisms (e.g., dinosaurs, trilobites, mammoths, giant tree ferns) that once lived in the past, and have since become extinct, have similarities with and differences form organisms living today.

The What
- Fossils as evidence
- Similarities and differences

The How (DOK)
Identify

Academic Vocabulary
Fossils, Evidence, Organisms, Dinosaurs
Trilobites, Mammoths, Past, Giant tree ferns
Extinct, Similarities, Differences, Identify

Kid Friendly Objective
I will identify fossils as evidence that extinct organisms have similarities and differences with organisms that live today.

Assessment of Kid Friendly Objectives
Students will be given pictures of fossils of an extinct organism. They will identify similarities and differences it has with a living organism.

Activity
Create a Venn diagram comparing/contrasting fossils with an organism

Activity
Students will work in teams to create a Powerpoint to compare fossils similarities / differences to current organisms

Activity
Students will research extinct organisms and discuss what possible organisms they are like

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Relate examples of adaptations (specialized structures or behaviors) within a species to its ability to survive in a specific environment (e.g., hollow bones/flight, hollow hair/insulations, dense root structure/compact soil, seeds/food, protection for plant embryo vs. spores, fins/movement in water.

The What
Examples of adaptations

The How (DOK)
Relate

Academic Vocabulary
Adaptations | Specialized structures | Specific environment
Behaviors | Coloration dense | Plant embryo
Species | Survive | Spores | Relate | Ability

Kid Friendly Objective
I will relate examples of adaptations in a species to its ability to survive in a specific environment.

Assessment of Kid Friendly Objectives
Explain how ______________ (i.e., hollow bones/flight, hollow hair/insulation, dense root structure/compact soil, seeds/food) are related to survival of a(n) ______________ (species).

Activity
Analogies: Students create analogies between adaptations and other protective features of any ideas (i.e., aluminum body, plane, hollow bones, birds)

Activity
Brainstorm: adaptations of living organisms

Activity
Journal: How is having hollow bones related to flying and survival to a bird? Think of other examples

INSTRUCTIONAL DESIGN FRAMEWORK
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**Standard**
Predict how certain adaptations, such as behavior, body structure, or coloration, may offer a survival advantage to an organism in a particular environment.

**The What**
Certain adaptations offer survival advantage

**The How (DOK)**
Predict

**Academic Vocabulary**
- Adaptations
- Behavior
- Body structure
- Organism
- Survival advantage
- Environment
- Coloration
- Predict

**Kid Friendly Objective**
I will predict how certain adaptations, such as behavior, body structure, or coloration, may provide a survival advantage to an organism in a particular environment.

**Assessment of Kid Friendly Objectives**
Students will be given a type of adaptation. They will predict how this adaptation will help the organism survive. Students will explain their reasoning and include examples.

**Activity**
- Students will create a visual aid to show each type of adaptation
- Students will be shown various media examples and take notes. They will then participate in academic conversations (Rally Robin)
- Journal: Write how behavior can help an organism survive and give an example. Repeat with body structure and coloration.
Standard
Describe the components of soil and other factors that influence soil texture, fertility, and resistance to erosion (e.g., plant roots and debris, bacteria, fungi, worms, rodents)

The What
Soil components and other factors

The How (DOK)
Describe

Academic Vocabulary

<table>
<thead>
<tr>
<th>Components</th>
<th>Soil</th>
<th>Factors</th>
<th>Soil texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertility</td>
<td>Resistance</td>
<td>Erosion</td>
<td>Debris</td>
</tr>
<tr>
<td>Bacteria</td>
<td>Fungi</td>
<td>Rodents</td>
<td>Describe</td>
</tr>
<tr>
<td>Cause</td>
<td>Effect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Kid Friendly Objective
I will describe the parts of soil and other factors and determine the effects on soil texture, fertility, and resistance to erosion.

Assessment of Kid Friendly Objectives
Given pictures of soil samples, students will be asked to identify the components of each sample and be able to describe its texture, fertility and how well it resists erosion.

Activity
Soil texture lab

Activity
Create Jeopardy game questions and play

Activity
Students will interact with media – Cloud – soil and create picture notes to show factors that influence soil texturing, fertility, resistance to erosion.
Standard
Identify and describe the properties of water that make it an essential component of the Earth system (e.g., its ability to act as a solvent, its ability to remain as a liquid at most Earth temperatures.

The What
Properties of water

The How (DOK)
Identify
Describe

Academic Vocabulary
Properties | Water | Essential Component
Solvent | Liquid | Solid | Gas
Dissolve | Identify | Describe | Earth system

Kid Friendly Objective
- I will identify the properties of water that make it an essential component of the Earth System.
- I will determine how the properties of water make it an essential component of the Earth System.

Assessment of Kid Friendly Objectives
- Why is water important to the Earth system?
- What properties of water make it an essential part of the Earth system?

Activity
- Lab
- Activity
  Students will create a poster showing water as a universal solvent and as a liquid
- Activity
  Research: water properties

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Make inferences about the formation sedimentary rocks from their physical properties (e.g., layering and the presence of fossils indicate sedimentation).

The What
Formation of sedimentary rocks

The How (DOK)
Make inferences

Academic Vocabulary
<table>
<thead>
<tr>
<th>Formation</th>
<th>Layering</th>
<th>Fossils</th>
<th>Sedimentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cementation</td>
<td>Inferences</td>
<td>Rock cycle</td>
<td>Deposition</td>
</tr>
<tr>
<td>Compression</td>
<td>Conglomerate</td>
<td>Sandstone</td>
<td>Limestone</td>
</tr>
<tr>
<td>Shale</td>
<td>Sediment</td>
<td>Sedimentary rocks</td>
<td>Physical properties</td>
</tr>
</tbody>
</table>

Kid Friendly Objective
I will make inferences about how sedimentary rocks form from their physical properties.

Assessment of Kid Friendly Objectives
Given a picture (or sample) of two different rocks, students will determine which rock is sedimentary.

Activity
Use of rock samples in lab.

Activity
Finding sedimentary rocks on playground or home, based on finding fossils, layers, or sand particles.

Activity
Give students several examples of sedimentary rocks. Students should look for common characteristics and record them.

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Explain how the formation of sedimentary rocks depends on weathering and erosion.

The What
The formation of sedimentary rocks

The How (DOK)
Explain

Academic Vocabulary
- Formation
- Cementation
- Conglomerate
- Sediment
- Weathering
- Compaction
- Sandstone
- Limestone
- Erosion
- Explain
- Limestone
- Sedimentary rocks
- Rock cycle
- Compression
- Shale

Kid Friendly Objective
I will explain how sedimentary rocks form depends on weathering and erosion.

Assessment of Kid Friendly Objectives
Given a diagram of the rock cycle, students will locate areas where erosion and weathering would cause settling of sediment. Students will then describe how cementation of the sediment occurs using the terms compaction and compression.

Activity
Students will create a story from the viewpoint of one particular piece of sediment or piece of fossil

Activity
Create/use G.O. to show how sedimentary rocks form

Activity
Journal: How are sedimentary rocks formed?

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Describe how weather agents and erosional processes (i.e., force of water as it freezes or flows, expansion/contraction due to temperature, force of wind, force of plant roots, action of gravity, chemical decomposition) slowly cause surface changes that create and/or change landforms.

The What
Changes that create/change landforms

The How (DOK)
Describe how

Academic Vocabulary
Weathering agents
Contraction
Surface changes
Describe
Erosional processes
Gravity
Create
Cause
Expansion
Chemical decomposition
Landforms
Effect

Kid Friendly Objective
I will describe the cause/effect of how weathering agents and erosional processes slowly cause surface changes that create and/or change landforms.

Assessment of Kid Friendly Objectives
Given various pictures of landforms, students will be asked to identify weathering agents and erosional processes that slowly cause surface changes.

Activity
Create a diorama or model showing examples of erosional processes.
Lab activity, also

Activity
Create a diorama/display/model of at least two erosion/weather processes

Activity
Students read Slow Changes book and take notes or outline weathering/erosion that changes the Earth’s surface
Standard
Describe how the Earth’s surface and surface materials can change abruptly through the activity of floods, rock/mudslides, or volcanoes.

The What
Earth’s surface and surface materials change

The How (DOK)
Describe

Academic Vocabulary
Earth’s surface  Surface materials  Abruptly
Floods  Rockslides  Mudslides
Volcanoes  Describe

Kid Friendly Objective
I will describe the cause/effect of how the Earth’s surface and surface materials can change abruptly because of floods, rockslides, mudslides, or volcanoes.

Assessment of Kid Friendly Objectives
Students will create a list of events that cause abrupt change in the earth’s surface and compare to a list of events that cause slow change.

Activity
Create a poem, Powerpoint, poster, song, model, ect., showing activity in detail with description

Activity
Students will make a foldable with each type of activity showing changes to the Earth’s surface

Activity
Journal: Quick write a list of the many ways possible that the Earth’s surface is changed quietly by natural events.
Standard
Identify events (earthquakes, volcanic eruptions) and the landforms created by them on the Earth’s surface that occur at different plate boundaries.

The What
Events and landforms

The How (DOK)
Identify

Academic Vocabulary
Events  Earthquakes  Landforms  Plateau
Valley  Ridge  Trench  Crust
Mantle  Core  Lithosphere  Convection
Magma  Lava  Fault  Focus
Volcanic eruptions  Plate boundaries  Divergent boundaries
Convergent boundaries  Tectonic plates  Seafloor spreading
Continental drift

Kid Friendly Objective
• I will identify events that occur at different plate boundaries.
• I will identify the landforms created by earthquakes and volcanic eruptions at different plate boundaries.

Assessment of Kid Friendly Objectives
Students will be asked to match events (earthquakes, volcanic eruptions) with the type of plate boundary on which they occur.

Activity

Activity
Small groups: students create a physical way to show type of each boundary and the landforms created by them

Activity
Journal: What types of activities occur at plate boundaries? What landforms do they create?

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Explain the types of fossils and the processes by which they are formed (i.e., replacement, mold and cast, preservation, trace).

The What
- Types of fossils
- Processes of how fossils are formed

The How (DOK)
Explain

Academic Vocabulary
Fossils
Replacement
Mold
Cast
Preservation
Trace
Process
Explain

Kid Friendly Objective
- I will classify types of fossils
- I will explain the processes that form fossils.

Assessment of Kid Friendly Objectives
The students will be asked to classify various fossil pictures as replacement fossils, mold and cast fossils, preservation fossils, or trace fossils.

Activity

Activity
Students will create each type of fossil and create a display with brief explanations

Activity
Journal: What types of fossils exist? Explain each type and how they are formed

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Use fossil evidence to make inferences about changes on Earth and in its environment (i.e., superposition of rock layers, similarities between fossils in different geographical locations, fossils of seashells indicate the area was once underwater).

The What
Fossil evidence

The How (DOK)
Use
Make inference

Academic Vocabulary
- Fossil
- Evidence
- Environment
- Superposition
- Similarities
- Geographical locations
- Use
- Inference
- Rock layers

Kid Friendly Objective
I will use fossil evidence to make inferences about changes on Earth and in its environment.

Assessment of Kid Friendly Objectives
- What fossil evidence supports the Theory of Plate Tectonics?
- What fossil evidence supports the idea that climate has changed over time?

Activity
Web Hunt: Students will search for information that supports the theory of Continental Drift. Create a collage with words (data)

Activity
Journal: Students will be given a picture prompts showing a fossil in rock layers, in a crust area, on two possibly connected coasts. What evidence does the fossil provide in each picture?
Standard
Relate the comparative amounts of fresh water and salt water on the Earth to the availability of water as a resource for living organisms and human activity.

The What
Comparative amounts of fresh and salt water

The How (DOK)
Relate

Academic Vocabulary
Fresh water   Salt water   Availability
Resource     Living organism   Relate
Human activity

Kid Friendly Objective
I will compare the amounts of fresh water and salt water to the amount of available water as a resource for living organisms and human activity.

Assessment of Kid Friendly Objectives
- Where do people and land animals get the water they need to drink and use?
- How does the amount of fresh water available for people and land animals compare to the water in the ocean?

Activity

Activity

Activity
**Standard**
Describe the affect of human activities (e.g., landfills, use of fertilizers and herbicides, farming, septic systems) on the quality of water.

**The What**
Affect of human activities

**The How (DOK)**
Describe

**Academic Vocabulary**
- Affect
- Human activities
- Landfills
- Fertilizer
- Herbicide
- Farming
- Septic system
- Agriculture
- Quality

**Kid Friendly Objective**
I will describe the affect of human activities on water quality.

**Assessment of Kid Friendly Objectives**
What human activities affect the quality of water?

**Activity**
Demonstration with jug of water poured in pollutants

**Activity**
Brainstorm human activities that could affect H2O quality
Standard
Describe evidence (e.g., diffusion of food coloring in water, light reflecting off of dust particles in the air, condensation of water vapor by increased pressure or decreased temperature) that supports the theory that matter is composed of small particles (atoms, molecules) that are in constant, random motion.

The What
Evidence that matter is composed of small particles that are in constant, random motion

The How (DOK)
Describe

Academic Vocabulary
Describe  Evidence  Theory
Composed  Particles  Constant
Random  Motion

Kid Friendly Objective
I will describe evidence that supports that matter is composed (made up of small particles that move in all directions.

Assessment of Kid Friendly Objectives
CR
What evidence can you describe that supports that matter is made up of small particles? Describe in detail
What evidence can you describe that supports that matter is constantly moving in all directions? Describe in detail

Activity
Demonstration: Graduated cylinder with food coloring, observe/record/chalk/flash light, describe and record

Activity
Lab: Create the lab experiment you described in your journal

Activity
Journal: If you had to prove that matter is made up of small particles and constantly moves in all directions, what experiment could you do to prove it?

INSTRUCTIONAL DESIGN FRAMEWORK
Standard
Describe the relationship between the change in the volume of water and changes in temperature as it relates to the properties of water (i.e., water expands and becomes less dense when frozen)

The What
Relationship between volume and temperature

The How (DOK)
Describe

Academic Vocabulary
Describe Relationship Volume
Properties Temperature Expand
Density

Kid Friendly Objective
I will describe how the change in water volume is related to the changes in temperature using water.

Assessment of Kid Friendly Objectives
CR
A pond freezes in the winter. Describe why it is frozen on the top of the pond, include the temperature at which this happens.
Your little brother put his can of soda (pop) in the freezer. Describe what will happen and why.
Your mom left a case of soda in your car over a very hot summer weekend. What might you find when you enter your vehicle. Why?

Activity
Investigation: Water at different temperatures, measure volume and density

Activity
Journal: What would happen if water freezes from the bottom up? Explain why it doesn’t.