

# What's the "Matter"?

**Grade Level:** 1<sup>st</sup> grade

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**Length of Unit:** 5 lessons (approximately 5 to 7 days)

## I. ABSTRACT

Students will explore various real life materials and participate in experiments in order to understand the basic concepts and properties of matter. In addition, students will be introduced to the concept that matter is composed of atoms through the creation of models. Students' learning will be extended as technology skills are integrated in this unit through the students' use of a digital camera and a Clicker 4 writing software program to create a personalized book on matter.

## II. OVERVIEW

### A. Concept Objectives

1. The student develops an appreciation of scientific inquiry. (TEKS SCI 1.2)

### B. Content from the *Core Knowledge Sequence*

1. Matter (p. 38)

a. Basic concepts of atoms

b. Names and common examples of three states of matter:

i. Solid (for example, wood, rocks)

ii. Liquid (for example, water)

iii. Gas (for example, air, steam)

c. Water as an example of changing states of matter of a single substance.

### C. Skill Objectives

1. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to communicate explanations about investigations. (TEKS – SCI 1.2 E)

2. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to record and compare collected information. (TEKS – SCI 1.4 B)

3. The student is expected to sort objects and events based on properties and patterns. (TEKS – SCI 1.5 A)

4. The student reads charts and informational texts to acquire information. (TEKS – ELA 1.10 B)

5. The student is expected to discuss meanings of words and develop vocabulary through meaningful/concrete experiences. (TEKS – ELA 1.11 A)

6. The student is expected to identify relevant questions for inquiry, use pictures, print, and people to gather information and answer questions, and draw conclusions from information gathered. (TEKS ELA 1.15 A, B, and C)

7. The student is expected to use available technology to compose text. (TEKS ELA 1.19 E)

8. The student is expected to record or dictate his/her own knowledge of a topic various ways such as by drawing pictures, and making lists, and showing connections among ideas. (TEKS ELA 1.23 B)

9. The student is expected to publish information in a variety of media including, but not limited to, sorted files or video. (TEKS TA 1.11 B)
10. The student uses technology applications to facilitate evaluation of word, both process and product. (TEKS TA 1.9 B)

### III. BACKGROUND KNOWLEDGE

- A. For Teachers
  1. <http://www.nyelabs.com/core.html?flashtarget=core.html&noflashtarget=noflash.html> (Episode 88)
  2. *What Is the World Made of?* by Kathleen Weidner Zoehfeld
  3. *Scott Foresman Science for Texas*, student's edition, by Scott Foresman and Company
  4. *What Your First Grader Needs to Know* by E. D. Hirsch, Jr.

### IV. RESOURCES

- A. Hirsch, Jr. E.D. *What Your First Grader Needs to Know*.
- B. Zoehfeld, Kathleen Weidner. *What is the World Made Of?*
- C. *Scott Foresman Science for Texas*, student's edition, by Scott Foresman publishing
- D. Ansary, Mir Tamin. *Matter*
- E. Branley, Franklyn M. and Keller, Holly. *Air Is All Around You*

### V. LESSONS

#### Lesson One: Basic Concept of Atoms

- A. *Daily Objectives*
  1. Concept Objective(s)
    - a. The student develops an appreciation of scientific inquiry. (TEKS SCI 1.2)
  2. Lesson Content
    - a. Matter (p. 38)
      - i. Basic concepts of atoms
  3. Skill Objective(s)
    - a. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to communicate explanations about investigations. (TEKS – SCI 1.2 E)
    - b. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to record and compare collected information. (TEKS – SCI 1.4 B)
    - c. The student is expected to discuss meanings of words and develop vocabulary through meaningful/concrete experiences. (TEKS – ELA 1.11 A)
    - d. The student is expected to identify relevant questions for inquiry, use pictures, print, and people to gather information and answer

questions, and draw conclusions from information gathered.  
(TEKS ELA 1.15 A, B, and C)

- e. The student uses technology applications to facilitate evaluation of word, both process and product. (TEKS TA 1.9 B)

B. *Materials*

1. Fresh peas
2. Large green grapes
3. Large purple grapes
4. Very sticky plastic wrap
5. Toothpicks
6. Scissors
7. Examples of matter (blocks, bottled water, classroom objects)
8. Small Dixie cups
9. Book, *What is the World Made of?* by Kathleen Weidner Zoehfeld
10. digital camera and students' floppies for digital camera
11. Appendix A, "Writing Assignment" workshop

C. *Key Vocabulary*

1. Atoms – the basic building blocks of matter that make up everyday objects - a desk, the air, even you are made up of atoms.
2. Matter – anything that takes up space.
3. Observe – use your five senses to gather information.
4. Properties - a characteristic trait or peculiarity
5. Investigate – inquiry based procedure problem solving process.

D. *Procedures/Activities*

1. The teacher will display various classroom objects as well as a pitcher of fruit juice, bottles of water, balloons, and blocks in order to motivate the students to engage in the lesson.
2. The teacher will ask the class what do all of these objects that are displayed in front of the classroom have in common.
3. The teacher will reassure students that all of these objects do in fact have something in common and will begin to read the book, *What is the World Made of?* (to p. 7)
4. The teacher will re-ask students what all of these things have in common and begin a review and discussion of the concepts introduced in the story.
5. The teacher will introduce the concept of atoms to the students by reading the definition of atoms obtained from the *key vocabulary*.
6. The teacher will gather students in large groups to create a model of an atom from the Brain Pop website, using materials listed above.  
(<http://www.brainpop.com/science/matter/atoms/bob.weml>)
7. The students will use the digital camera to take pictures of each other as they complete their model project to use in the culminating activity.

E. *Assessment/Evaluation*

1. Informal assessment - teacher observation of students as they complete the model activity.

2. Formal assessment – students will write a sentence explaining their model. (appendix A)

## **Lesson Two: Matter - Solid**

### **A. *Daily Objectives***

1. Concept Objective(s)
  - a. The student develops an appreciation of scientific inquiry. (TEKS SCI 1.2)
2. Lesson Content
  - a. Matter (p. 38)
    - i. Names and common examples of three states of matter:
      1. Solid (for example, wood, rocks)
3. Skill Objective(s)
  - a. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to communicate explanations about investigations. (TEKS – SCI 1.2 E)
  - b. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to record and compare collected information. (TEKS – SCI 1.4 B)
  - c. The student reads charts and informational texts to acquire information. (TEKS – ELA 1.10 B)
  - d. The student is expected to discuss meanings of words and develop vocabulary through meaningful/concrete experiences. (TEKS – ELA 1.11 A)
  - e. The student is expected to identify relevant questions for inquiry, use pictures, print, and people to gather information and answer questions, and draw conclusions from information gathered. (TEKS ELA 1.15 A, B, and C)
  - f. The student is expected to record or dictate his/her own knowledge of a topic various ways such as by drawing pictures, and making lists, and showing connections among ideas. (TEKS ELA 1.23 B)
  - g. The student uses technology applications to facilitate evaluation of word, both process and product. (TEKS TA 1.9 B)

### **B. *Materials***

1. Solid objects (for example, wood, rocks)
2. Chart paper folded into thirds
3. Marker
4. *Matter* by Mir Tamin Ansary
5. Prepared Jell-O in large baking pans
6. Crayons
7. Construction paper
8. Cookie cutters
9. Digital camera and student floppies

10. Sentence strips
11. *What Is The World Made Of?* By Kathleen Weidner Zoehfeld

C. *Key Vocabulary*

1. Solids – solid things are neither liquid nor gas. They have shape of their own.

D. *Procedures/Activities*

1. The teacher will gather students in the large group area and review the previous lesson with students by reviewing the information read in the previous day's book titled, *What Is the World Made Of?* .
2. The teacher will read pages 14 – 15 in the book, *Matter* and then stop to discuss the new information presented on solids.
3. The teacher will introduce the Jell-O snack to the class as an example of a solid and discuss the properties that make this food a solid.
4. The teacher will divide students into four small groups and allow them to cut out Jell-O pieces using cookie cutters.
5. The teacher will draw students' attention to the chart paper displayed in front of the classroom and suggest that the class will draw examples of solids as an independent activity to place on the large chart paper that has been divided into thirds and titled, "Matter".
6. The students will work independently to create examples of solids on construction paper.
7. The students will use the digital camera to take pictures of their completed art project to use in the culminating activity.
8. The teacher will gather the students back to the large group area and ask the students to share their picture examples of solids with the class.
9. The teacher will illicit students' suggestions about what to write on the classroom chart on matter.
10. The teacher will call on students individually to tape their pictures on the chart in the first column.
11. The teacher will begin a large group interactive writing activity with students to create a definition for solids using sentence strips to be placed on the classroom chart with their art work.

E. *Assessment/Evaluation*

1. Informal Assessment – Examples of students' art projects of solids.

**Lesson Three: Matter - Liquids**

A. *Daily Objective*

1. Concept Objective(s)
  - a. The student develops an appreciation of scientific inquiry. (TEKS SCI 1.2)
2. Lesson Content
  - a. Matter (p. 38)
    - i. Names and common examples of three states of matter:
      1. Liquid (for example, water)
3. Skill Objective(s)
  - a. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to communicate explanations about investigations. (TEKS – SCI 1.2 E)

- b. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to record and compare collected information. (TEKS – SCI 1.4 B)
- c. The student is expected to sort objects and events based on properties and patterns. (TEKS – SCI 1.5 A)
- d. The student reads charts and informational texts to acquire information. (TEKS – ELA 1.10 B)
- e. The student is expected to discuss meanings of words and develop vocabulary through meaningful/concrete experiences. (TEKS – ELA 1.11 A)
- f. The student is expected to identify relevant questions for inquiry, use pictures, print, and people to gather information and answer questions, and draw conclusions from information gathered. (TEKS ELA 1.15 A, B, and C)
- g. The student is expected to record or dictate his/her own knowledge of a topic various ways such as by drawing pictures, and making lists, and showing connections among ideas. (TEKS ELA 1.23 B)
- h. The student uses technology applications to facilitate evaluation of word, both process and product. (TEKS TA 1.9 B)

B. *Materials*

- 1. Different sizes of containers (for example, big bowl, small bowl, pitcher, and tall drinking glass)
- 2. Chart paper from lesson two
- 3. Marker
- 4. *What Is the World Made Of?* by Kathleen Weidner Zoehfeld
- 5. Crayons
- 6. Construction paper
- 7. Digital camera and student floppies from lesson two
- 8. Frozen ice cubes
- 9. Paper towels
- 10. Clear plastic bowls for the frozen ice to melt in
- 11. Appendix B, “Ice Melting Observation” worksheet
- 12. Sentence strips

C. *Key Vocabulary*

- 1. Liquids – water, milk, and oil are all kinds of liquid. Liquid can be poured and it does not have a shape of its own.
- 2. Record changes – observe data looking for difference and writing information down.

D. *Procedures/Activities*

- 1. The teacher will gather students in the large group area and review the previous two days lessons with students by re-reading pages 1 – 11 of the book, *What Is the World Made of?*
- 2. The teacher will continue to read pages 12 – 13 in the book that discusses the new information on liquids.

3. The teacher will gather students to a display various examples of liquids and different sizes of containers (for example, big bowl, small bowl, pitcher, and tall drinking glass).
4. The teacher will ask the class, “Why do we put liquids in containers?” and encourage students to respond to question and observations.
5. The teacher will again draw students’ attention to the class chart display from lesson two and illicit student definitions of liquids to be added to the chart.
6. The teacher will introduce an observation of ice melting activity to the students to be completed in small groups.
7. The students will use the digital camera to take pictures as they complete both their small group observation activity and independent art activity.
8. The students will work in small groups to draw and write statements describing observations of ice melting in fifteen minute time periods. (appendix B)
9. The students will work independently to create examples of liquids as an independent activity to add on the large chart paper.
10. As students complete their first small group observation of the ice melting activity and art activity, the teacher will gather the students back to the large group area and ask the students to share their picture examples of liquids with the class.
11. The teacher will remind students to make their second small group observation of the ice melting activity when the allocated time period has passed.
12. The teacher will begin a large group writing activity with students to create a definition for liquids.

E. *Assessment/Evaluation*

1. Formal assessment – Appendix B, “Ice Melting Observation” worksheet

**Lesson Four: Matter - Gas**

A. *Daily Objective*

1. Concept Objective(s)
  - a. The student develops an appreciation of scientific inquiry. (TEKS SCI 1.2)
2. Lesson Content
  - a. Matter (p. 38)
    - i. Names and common examples of three states of matter:
      1. Gas (for example, air, steam)
3. Skill Objective(s)
  - a. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to communicate explanations about investigations. (TEKS – SCI 1.2 E)
  - b. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to record and compare collected information. (TEKS – SCI 1.4 B)
  - c. The student is expected to sort objects and events based on properties and patterns. (TEKS – SCI 1.5 A)

- d. The student reads charts and informational texts to acquire information. (TEKS – ELA 1.10 B)
- e. The student is expected to discuss meanings of words and develop vocabulary through meaningful/concrete experiences. (TEKS – ELA 1.11 A)
- f. The student is expected to identify relevant questions for inquiry, use pictures, print, and people to gather information and answer questions, and draw conclusions from information gathered. (TEKS ELA 1.15 A, B, and C)
- g. The student is expected to record or dictate his/her own knowledge of a topic various ways such as by drawing pictures, and making lists, and showing connections among ideas. (TEKS ELA 1.23 B)
- i. Solving problems. The student uses technology applications to facilitate evaluation of word, both process and product. (TEKS TA 1.9 B)

B. *Materials*

- 1. Chart paper from lesson two and three
- 2. Marker
- 3. *Air Is All Around You* by Franklyn M. Branley
- 4. Crayons
- 5. Construction paper
- 6. Digital camera and student floppies from lesson two
- 7. Appendix C, “Blowing up a Balloon with Chemical Reaction” experiment
- 8. One medium sized balloon
- 9. Three different sized bottles (for example, water bottle, soda bottle, etc.)
- 10. ½ to ¾ cup vinegar, depending on the size of the bottle
- 11. One small box baking soda
- 12. One teaspoon
- 13. Sentence strips
- 14. Appendix D, “It’s a Gas” worksheet

C. *Key Vocabulary*

- 1. Gas – the air around us is a kind of gas, so is steam from boiling water. A gas does not have a shape of its own.

D. *Procedures/Activities*

- 1. The teacher will gather students in the large group area and review the previous three days lessons with students by re-reading pages 1 – 13 of the book, *What Is the World Made of?*
- 2. The teacher will ask the students to run in place very fast for one minute and will ask the students if they notice how hard they are breathing. The teacher will encourage students to respond to question and observations.
- 3. The teacher will read the book, *Air Is All Around You*, and then discuss the new information on gases.
- 4. The teacher will assign a student to use the digital camera to take pictures as the class observes the teacher facilitating the “Blowing up a Balloon with Chemical Reaction” experiment. (appendix C)

5. The teacher will gather students to a display of the prepared items needed for the experiment to be completed as a large group activity.
  6. As the teacher completes the experiment she will prompt the students to make observations and inquiries about what is causing the balloon to expand.
  7. The students will communicate their observations to the teacher.
  8. Now the teacher will draw students' attention to the class chart display from lessons two and three and illicit student definitions of gas.
  9. The teacher will begin a large group interactive writing activity with the students to create a definition for gas using sentence strips to be added to the classroom chart.
  10. The students will work independently to draw and write statements describing their observations of the balloon experiment. (appendix D)
  11. The teacher will gather the students back to the large group area and ask the students to share their picture and writing about the balloon experiment with the class.
- E. *Assessment/Evaluation*
1. Formal assessment – student written explanation of the balloon experiment. (appendix D)

**Lesson Five:**

- A. *Daily Objective*
1. Concept Objective(s)
    - a. The student develops an appreciation of scientific inquiry. (TEKS SCI 1.2)
  2. Lesson Content
    - a. Matter (p. 38)
    - b. Names and common examples of three states of matter:
      - i. Solid (for example, wood, rocks)
      - ii. Liquid (for example, water)
      - iii. Gas (for example, air, steam)
    - c. Water as an example of changing states of matter of a single substance.
  3. Skill Objective(s)
    - a. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to communicate explanations about investigations. (TEKS – SCI 1.2 E)
    - b. The student reads charts and informational texts to acquire information. (TEKS – ELA 1.10 B)
    - c. The student is expected to discuss meanings of words and develop vocabulary through meaningful/concrete experiences. (TEKS – ELA 1.11 A)
    - d. The student is expected to identify relevant questions for inquiry, use pictures, print, and people to gather information and answer questions, and draw conclusions from information gathered. (TEKS ELA 1.15 A, B, and C)
    - e. The student is expected to use available technology to compose text. (TEKS ELA 1.19 E)

- f. The student is expected to publish information in a variety of media including, but not limited to, sorted files or video. (TEKS TA 1.11 B)
- g. The student is expected to record or dictate his/her own knowledge of a topic various ways such as by drawing pictures, and making lists, and showing connections among ideas. (TEKS ELA 1.23 B)
- j. The student uses technology applications to facilitate evaluation of word, both process and product. (TEKS TA 1.9 B)

**B. *Materials***

- 1. Clicker 4 software
- 2. Computer lab
- 3. Teacher's example of Clicker 4 student book project
- 4. Students' completed appendices A, B, and D
- 5. Student floppies
- 6. Chart paper from lesson two, three, and four

**C. *Key Vocabulary***

- 1.

**D. *Procedures/Activities***

- 1. The teacher will prepare for this lesson by modeling how to access student pictures and import the pictures into a Clicker 4 graphics library. This activity will be taught during computer class or a specials class. The teacher will also need to prepare an example of a book to be created by each student using the Clicker 4 software program.
- 2. The teacher will gather students to the large group area and review the concepts, observations, and definitions presented throughout the week with students on matter using the chart display from lesson two, three, and four.
- 3. The teacher will pass out students completed appendices A, B, and D and review past lessons as a large group activity. Then the teacher will call on various students to read their observations from their appendices.
- 4. The teacher will display an example of a book that the students will create and share during the culminating activity.
- 5. The teacher will explain to the students that they will create their own books using pictures they have taken and their completed appendices as they learned about matter. The student books will be completed during the next two days computer classes.

**E. *Assessment/Evaluation***

- 1. Formal assessment - student book on matter used on the Clicker 4 software program.

**VI. CULMINATING ACTIVITY**

- A. Students will share their individual books that they have created using the Clicker 4 software program with other students.

**VII. HANDOUTS/WORKSHEETS**

- A. Appendix A: worksheet – Writing Assignment
- B. Appendix B: worksheet – Ice Melting Observations
- C. Appendix C: experiment – Blowing up a Balloon with Chemical Reaction

D. Appendix D: worksheet – It’s a Gas

### VIII. BIBLIOGRAPHY

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# **APPENDIX A: WRITING ASSIGNMENT**



Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Write a sentence describing what your model represents.**

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# **APPENDIX B: ICE MELTING OBSERVATION**



Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Draw and write a sentence describing what you have observed for every 15 minutes.**

	<b>Your Drawing</b>	<b>Your Description</b>
<b>After 15 Minutes</b>		
<b>After 30 Minutes</b>		
<b>After 45 Minutes</b>		

Appendix C:  
Blowing up a Balloon with Chemical Reaction

1. You will need a medium sized balloon.
2. Next take a bottle, water bottle, soda bottle, etc.
3. In the bottle pour  $\frac{1}{2}$  to  $\frac{3}{4}$  cup of vinegar, depending on the size of the bottle.
4. In the balloon, carefully spoon in 4-5 teaspoons of baking soda.
5. Carefully fit the balloon over the mouth of the bottle.
6. Hold the balloon the bottle as you watch it inflate.

The reaction is between the vinegar and baking soda. Carbon Dioxide, a gas is produced and released out the top of the bottle into the balloon.

(Hint: If you want to perform this experiment with a bigger balloon, you will need a bigger bottle and more ingredients.)

<http://www.cm.brevard.k12.fl.us/LeesK/042chem.htm>



# APPENDIX D: IT'S A GAS



Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Explain what caused the balloon to expand.**

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