County Implementation Award Program (CIAP) Math and Science Lesson

Unit Title: Johnny Appleseed

Lesson Title: Apple Shapes

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Grade Level: 1st Grade

Time Frame: 2 School Days

Targeted Standard(s):

1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their parts to help them survive, grow, and meet their needs.

CCSS.MATH.CONTENT.1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.

Short Description of Targeted Phenomenon:

Students will be shown pictures of apples- before peeling and after as they are browned (see below).

Three Dimensions of NGSS

Science & Engineering Practice/s (SEP): *Constructing Explanations and Designing Solutions*
Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
-Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)

Crosscutting Concept/s (CCC): Patterns: *Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.*
Structure and Function: *The shape and stability of structures of natural and designed objects are related to their function(s).*
Connection to Engineering, Technology, and Applications of Science: *Influence of Engineering, Technology, and Science on Society and the Natural World:*
-Every human-made product is designed by applying some knowledge of the natural world and is built by using materials derived from the natural world.

Disciplinary Core Idea/s (DCI): ***LS1.A: Structure and Function:*** *All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)*

*LS1.D: I**nformation Processing:** Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)*
Language Supports: Teacher should create anchor charts to teach the 2 types of clocks (analog and digital). Teacher should help students become familiar with the language around time.
Materials Needed: Apples (half peeled/half still with skin), analog clock, digital clock, timer, pencils, crayons, worksheet
Objective(s): Students will be able to: **1.** Tell and write time by the half hour. **2.** Notice the change in the apples and show that in their drawings/sketches. **3.** Understand the importance the skin has in keeping an apple healthy.
How Math and Science concepts/skills/practices were integrated in this lesson: The lesson integrates the math and science concepts clearly by having students record time (math) and observe a phenomenon (science) with the apples. The students then will use their data to inform their inventions of the skin.
Possible Challenges /Misconceptions: **The idea that the hour hand does not remain on the hour number throughout that hour. For example, at 9:30 the hour hand is halfway between the numbers 9 and 10.** **The concept of half hour also being 30 minutes and that the minute hand is on the 6.** **Students may initially believe any partition of an hour is half.**
Formative Assessment: Teacher will take pictures, observe, and have conversations with students during the activity and during student observations.

Lesson Opening	
Teacher Actions	**Student Actions**
Teacher will create a KWL chart about apples. The teacher will ask students to share out their knowledge of apples or what they want to know about apples. Teacher will record these thoughts onto the chart. Teacher will read the story “Apples for Everyone”	Students will turn-and-talk with a neighbor and then share out what they know and what they want to know about apples.
Lesson Introduction	
Teacher Actions	**Student Actions**

Teacher will explain to the students how apples have skin. Teacher will ask the students to turn and talk with a neighbor about why apples have skin. Teacher will record the student hypotheses on an anchor chart.	Students will turn and talk with a neighbor about why apples have skin.
Body of Lesson	
Teacher Actions Day 1: Teacher will give each table group a peeled apple and an unpeeled apple. Teacher will direct the students back to their apples. Day 2: Teacher will review the results of yesterday's observation and ask students to work with their teams to create a "skin" for the peeled apple. The teacher will cut into an apple with the skin to show that the inside of that apple never turned brown because of the skin. Teacher will encourage students to be creative and really think about what the skin needs in order to keep the apple fresh.	**Student Actions** Day 1: Students will work with their group to complete the worksheet. They will draw a picture of what the apple looks like and the time. They will check the apple every 30 minutes for the entire day. Day 2: Students will have many different materials to use to create a "skin" with their teammates.
Lesson Closure	
Teacher Actions Teacher will bring students back together to review the different "skins". Teacher will lead a discussion around what "skin" worked best. Teacher will explicitly teach that the oxygen (air) is the reason for the browning of the apple.	**Student Actions** Students will share in their groups their invention. The students will explain why their "skin" worked or did not work.
Summative Assessment: Teacher will collect the worksheets and assess, looking for correct written time in analog and digital form.	
Other Teaching Resources: Teacher can always add in books, YouTube videos, etc. to enhance learning of apples, Johnny Appleseed, etc.	
Lab Safety: Teacher should do all the cutting of the apples. Students should be informed that they do NOT eat the apples.	

Extensions (if any): To connect back to the Performance Expectation, have students design a solution to a human problem connected to the learning done in this lesson, such as developing ways to protect skin or retain moisture based on apple skins. Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.)

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APPLE OBSERVATIONS

Time – Analog	Time – Digital	Unpeeled Apple	Peeled Apple
	:		
	:		
	:		
	:		
	:		
	:		

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