

## **SNWA Goal 2 Objectives 2.4, 2.5, 2.6 CCSD Curriculum Essentials Framework**

### **Science**

*It is expected that students will:*

(5)4.6 investigate and describe how technology can be used to extend resources [NS 16.5.2]

(5)4.9 investigate and describe how consumptive patterns of people vary in different places [NS 17.5.1]

### **English Language Arts**

*It is expected that students will:*

(5)4.5 identify authors' ideas and purposes in texts including advertisements and public documents [NS 4.5.5]

### **Social Studies**

*It is expected that students will:*

(5)2.1 describe how scarcity requires a person to make a choice and identify a cost associated with the decision [NS 1.5.1]

(5)2.3 demonstrate an understanding that choosing a little more or a little less generates either a benefit or a cost [NS 1.5.3]

(5)2.9 demonstrate an understanding of supply and demand in a market [NS 3.5.2]

### **Mathematics**

*It is expected that students will:*

(5)9.4 identify practical applications of mathematical principles that can be applied to other disciplines [NS 9.5]

(5)9.5 identify, explain, and use mathematics in everyday life [NS 9.8]

**Purpose:** In this lesson students will investigate ways to reduce the amount of water used for daily activities.

**Time:** three 45-50 minute sessions

### **You will need:**

- copies of Grade 5 - Newspaper Article about water conservation issues from welcome.pdf (one for each student)
- 3 large pieces of paper for class charts
- plastic shower flow meter bag (one for each student- included)
- Grade 5 - Class Record Sheets from the welcome.pdf

### **Teacher Note:**

Try the shower flow meter bag yourself first so you can answer students' questions about how it works. Instructions are printed on the bag.

### **Introduction**

1. Distribute copies of the newspaper article. Read and discuss the article with the class. Ask, "Why is it important for people in Southern Nevada to save water?"

### **Making Discoveries**

2. Lead students in a discussion about the importance of water to a desert community. Ask students to brainstorm ways in which they might be able to save water. Record suggestions on class chart.

## Teacher Note:

These are some common household uses for water, and the amounts normally used.

- ♦ taking a shower, 110 liters (water running, 10 minutes)
- ♦ brushing teeth, 44 liters (water running)
- ♦ taking a bath, 264 liters (tub full)
- ♦ toilet flushing, 26 liters (large tank)
- ♦ dish washing by hand, 198 liters (water running)
- ♦ machine dish washing, 62 liters (full cycle)
- ♦ washing clothes, 154 liters (full cycle, top water level)
- ♦ washing a car, 180 liters
- ♦ watering a lawn, 300-400 liters per hour



3. Tell students that over the next few days, they will investigate ways in which the amounts of water used at home might be reduced. Students will measure the amount of water used by their shower, and bring that information to class. Discuss with the class how they will use the “shower flow meter” bag to measure that amount of water.
4. Once students have collected their data, ask them to record it in their notebooks, and to share their findings with the class. Record student data on the overhead transparency.
5. Brainstorm ways in which students might be able to change the amount of water used, either by changing the showerhead, or by changing the way they shower, to save water. List on a class poster. Students should choose one method to reduce the amount of water, and write it in their notebooks.



**Teacher Note:** *The bag measures water for a 6-minute shower. If students suggest taking shorter showers to save water, they may recalculate the number of gallons used. For example, a student’s first measurement might show the shower using 6 gallons per minute, or 36 gallons per shower. If the student chooses to conserve water by shortening his/her shower time to 3 minutes, only 18 gallons per shower would be used.*



6. Using the conservation method they have chosen, students should remeasure and/or recalculate the amount of water used, and bring that information to class the following day.
7. Once students have collected their data, ask them to record it in their notebooks, and to share their findings with the class. Record student data on one of the overhead transparencies.

8. Students should compute the amount of water saved, if any, and record the difference in their notebooks. Record results on the overhead transparency.

### **Closing**

9. Ask the students to share the amounts of water saved. Record these amounts on the board, and ask the students to compute the total amount of water saved by the class during its investigation.

### **Teacher Note:**

*Small quantities of low-flow showerheads are available free from the Southern Nevada Water Authority. Call the Water Conservation Hotline at 258-SAVE.*

### **Extension**

Bring in enough plastic gallon jugs to illustrate how many gallons of water were saved during the class' investigation. (Or cut out shapes of jugs from paper.) Mount on bulletin board as a reminder of the potential for water conservation by students.

### **Extension**

Students or student teams investigate amounts of water used around Southern Nevada (e.g. casinos, parks, golf courses, etc.). They pick a site, find out how much water is used, and create some suggestions for conserving water at the site.



*The teacher should introduce or review the following vocabulary with the students within the context of this lesson.*

**conclusion:** a statement reflecting on the results of an investigation

**conservation:** wise use and protection from depletion and pollution

**consumer:** someone who uses something

**results:** a record of what happened during an investigation





# THE BASIN

Brimming with News About Water

## Water crisis looms as world population grows, report says

Nearly half a billion people (500,000,000) around the world face shortages of fresh water. This number is expected to swell to 2.8 billion people by 2025 as the world population grows, according to a report released Wednesday. One in every three people will live in countries short of fresh water.

If you are 10 years old today, this shortage will occur when you are 34 or 35 years old. "To avoid catastrophe... it is important to act now," said the report from the Johns Hopkins University School of Public Health. What should we do?

We need to cut the demand for fresh water now. In order to do that, we need to:

- slow population growth. Fewer people will use less water.
- conserve water, especially in arid desert regions like the area of Southern Nevada.
- pollute less. We need to take better care of our water supply.

- manage our supply of water better.

Today, 31 countries, mostly in Africa and the Near East, are facing dwindling water supplies. By 2025, there will be so many people that another 17 countries, including India, will be pushed onto the list of countries with water shortages. China, which might have 1.5 billion people in 2025, will not be far behind, the report said.

Much of the world is trying to meet a growing demand for fresh water. The situation is worse in developing countries. Almost 95 percent of the 80 million people added to our world each year are born in these countries. In addition, industries, cities and farms are fighting for their share of the water in such nations, the report said.

In many developing countries, lack of water might keep people there from improving the quality of their lives in the future. The more people a country has, the more water is

needed to grow food for those people. More water is needed for personal hygiene and health. More of the supply of water must also go to growing cities and industries.

But there is no more fresh water on Earth now than there was 2,000 years ago, when the human population was less than 3 percent of its current size.

Even in the United States, which has plenty of fresh water on a national basis, ground water is being used much faster than it is being refilled. This is especially true in Southern Nevada, where the rising population has caused the level of ground water to fall dramatically.

What will people do when they begin to run out of water? The report warned that disagreements about water could turn violent as shortages continue to grow.