



# The Water Clock

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**Objective:** Students will perform a reader's theater and then build a water clock.

**Grade Level:**

Elementary

**Subject Areas:**

Social Studies,  
Geography, Art, Science,  
Mathematics

**Setting:**

Classroom

**Skills:**

Observation, interpreting  
information, analysis

**Prior Preparation:**

Collect all the supplies you'll need to make the clock. If you're going to do this as a small group activity, ask students to bring in some of the supplies they'll need. Make copies of the reader's theater.

**Vocabulary:**

artifice, chastise, disdain,  
dubious, etch, feat,  
intricate, sophisticated

**Materials:**

*These supplies are used to construct 1 water clock*

Ruler

Timer (stop watch or watch with a second hand)

Permanent marker

2 yogurt cartons or disposable coffee cups

Masking tape

A small nail or push pin

Modeling clay

Markers, crayons, paints (optional)

*Other supplies*

[Copy of "The Timekeepers" Script](#)

["Time Flies" handout](#)

Story props (optional)

**Background:**

Webster's Dictionary defines water clock as an instrument or machine serving to measure time by the fall, or flow, of a certain quantity of water. Water clocks were among the earliest timekeepers that didn't depend on the observation of celestial bodies. One of the first water clocks was found in the tomb of the Egyptian pharaoh Amenhotep I who was buried around 1500 BCE.

Water clocks initially were made of two containers of water, one higher than the other, allowing water to travel from the higher container to the lower container through a hole or from sloping slides. The containers had marks showing the water levels, and the marks told the time.

Water clocks worked better than sundials because they told the time at night as well as during the day. They were also more accurate; however, since the rate of flow of water is very difficult to control accurately, a clock based on that flow can never really achieve excellent accuracy.

**Procedure:**

- Have students do the reader's theater presentation, "The Timekeepers." As an additional activity, have students make props, costumes, etc. for the reader's theater and present it to another grade.
- Hold a discussion about the different characters that visited the watchmaker during his dreams. If you'd like, do a small geography lesson on the places that each "dream visitor" comes from, expanding on cultures, time pieces, etc.
- Construct a water clock - students can be placed into small groups with each group constructing its own clock.

- Use the push pin/nail to make a small hole in the middle of the bottom of one of the containers. If using disposable cups, students can decorate them as time permits.
- Draw several lines inside one of the containers, 1/4 inch apart.
- Fix the containers to the ruler using the masking tape. Put the container marked with the lines at the bottom of the ruler. Put the other container with the hole near the top of the ruler.
- Stand the ruler upright by fixing the end in modeling clay and sticking it to a table, or a heavy piece of cardboard, etc.
- Cover the hole in the top container with your finger and carefully add water to the container.
- Take away your finger and time how long it takes for the water to reach each of the levels in the bottom container. When all the water has dripped into the second container, you'll be able to use this "clock" to keep track of time.
- Finally, give the students the "Time Flies" student handout and have each practice their time-telling (mathematics) skills.

### **Vocabulary:**

<u>Artifice</u>	a clever, skillfully made resource to meet a particular need
<u>Chastise</u>	to scold
<u>Disdain</u>	to look down upon; to treat as unworthy
<u>Dubious</u>	feeling doubt
<u>Etch</u>	to make a design by pressing sharply into a surface
<u>Feat</u>	a remarkable accomplishment or deed
<u>Intricate</u>	full of great amounts of detail
<u>Sophisticated</u>	very complex

### **Extensions:**

- Do a unit on ancient and current time pieces. Sundials, water clocks, and hourglasses, are just a few that can be researched and discussed. When doing this unit, have students explore the "art" of ancient map making and discuss the correlation between the two subjects.
- Hold a spelling bee with the vocabulary words from the reader's theater. Add more spelling words from the geography lesson you've taught as an extension.
- Have students construct a simple sundial. Go to: <http://www-spof.gsfc.nasa.gov/stargaze/Sundial.htm> for instructions and patterns.