



Paideia Seminar Lesson Plan



Text:

12 Inch Ruler

Grade/Subject

Early ES / Math



Ideas, Values:

Communication, Measure, Standard, Truth, Unit



Pre-Seminar Content



Launch Activity:

Divide the class into Measurement Teams consisting of two students each. Distribute one 12 inch ruler and a clipboard with paper and pencil to each team. Have them race to measure as many different things in the classroom as they can in ten minutes, but stress that they have to be as accurate as possible.



Inspectional Read:

Working with the same teams as in the *Launch Activity*, distribute a ruler and two sheets of unlined paper to each pair. Ask the students to work together to draw a line four inches long on one sheet of paper. Then using the second sheet of paper, have the other student draw a four-inch line. Have the students compare the two lines to see how similar they are. Discuss the various kinds of increments (inch, half-inch, etc.) that the ruler is divided into.

Background Information:

Share as appropriate: In the history of measurement many distance units have been used which were based on human body parts such as the cubit, hand and foot and these units varied in length by era and location. In the late 18th century the metric system came into use and has been adopted to varying degrees in almost all countries in the world (except the United States). Rulers made of ivory were in use by the Indus Valley Civilization period prior to 1500 BC, so we know that they are very old.

Consider sharing with students other different kinds of rulers: yard stick, tape measure, folding carpenter's rule, etc.

Vocabulary:

Discuss with students definitions for the terms *inch* and *foot*, noting how they each depend on the other (inch is $1/12$ of a foot and so on). Also note the need for using parts of inches when measuring items smaller than one inch. Use this literacy cycle to introduce any other math vocabulary you would like for students to manipulate in speech and writing.

Analytical Read:

Have the original measurement teams (from the *Launch* and *Inspectional Read*) measure five objects in the classroom by first, estimating length in feet; second, estimating length in inches; third, measuring and recording length in feet; and finally, measuring and recording length in inches. Discuss what the students discovered about estimation versus actual measurement.

Finally, just before the seminar, distribute a 12-inch ruler to each student in the seminar circle.



Pre-Seminar Process

 Define and state purpose for Paideia Seminar.

 Describe the responsibilities of facilitator and participants.

 Have participants set a Personal Goal.

 Agree on a Group Goal.

Seminar Questions

Opening (Identify main ideas from the text.):

- ❖ What could be another name for the object you hold in your hand? (round-robin response)
- ❖ Why did you choose that name? (spontaneous discussion)

Core (Analyze textual details.):

- ❖ The ruler you hold in your hand is one “foot” long. Where do you think the word foot came from?
- ❖ Does anyone here have a foot or a shoe that is exactly 12 inches long? If not, why do we agree to call this exact length “one foot”?
- ❖ Why are the inches marked on your ruler broken down into smaller units? How do they help you measure things?
- ❖ Is it important that we agree on “standard” units of measurement? Why or why not?
- ❖ What other kinds of “rulers” can you think of? What kinds of things do they measure?

Closing (Personalize and apply the ideas.):

- ❖ If you could design your own “unit” of measurement, what would you call it? How large or small would it be and what would it measure?

Post-Seminar Process

- ★ Have participants do a written self-assessment of their personal participation goal.
- ★ Do a group assessment of the social and intellectual goals of seminar.
- ★ Note reminders for next seminar.



Post-Seminar Content

★ Transition to Writing:

For homework, have students measure one dozen things with their rulers and record the lengths when possible on a single sheet of paper. Then they should list the things that they were unable to measure.

★ Writing Task:

What kinds of things can be measured with a ruler and what kinds of things cannot? After reading and discussing the standard 12-inch ruler, write a paragraph in which you compare things that can be measured with a ruler with things that cannot. Support your response by describing what you did with your ruler. (Informational or Explanatory/Compare)

(LDC Task#: 18)



★ Brainstorm:

With the entire class, list on the (interactive) white board lists of objects that can and cannot be measured with a ruler. Then list all the reasons why an object might be impossible to measure with a ruler (too large, too small, not flat, etc.).

Structure the Writing:

Share with students a clear template for their comparison paragraphs that uses the following pattern (or another similar pattern of your own choosing): description of what objects I attempted to measure; explanation of what objects I could / couldn't measure; followed by my description of what objects can't be measured and why.

First Draft:

Give students 15-20 minutes to draft their comparison paragraphs following the template.

Collaborative Revision:

Have students work in their original Measurement Teams to revise their paragraphs by having each partner read his or her paragraph aloud and take suggestions for clarity.

Edit:

Help students edit and prepare a final version of their paragraphs for publication.

Publish:

Create a Measurement Station in your classroom where all sorts of rulers and other measurement tools are stored and where almost any object can be measured. Display the final drafts of your student paragraphs at the Measurement Station as examples of your thinking about measurement.

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