Four wings, many questions

Matthew B. Sellers | Observe, measure, investigate

Grades 4-8 | Adaptable for families | **45-minute lesson** + model-building time

THE BIG QUESTION

What can a model help us notice, and what must we learn from historical evidence?

STUDENTS WILL

Describe the four-wing arrangement; separate an observation from an inference; use a model scale; ask a question that a historical source could help answer.

PREPARE

One Sellers model or its completed-model picture; student worksheet; pencils; ruler. For building: the 5-page model PDF, cardstock, scissors, and glue. Keep the finished-model picture visible.

TEACH IT IN FOUR STEPS

Observe (5 minutes). Look silently, then collect observations without guessing how well the machine flew.
Investigate (10 minutes). Read the dated source statement on the worksheet. Discuss why a date matters when an inventor changes a design.
Work (20 minutes). Complete the worksheet; begin a build or examine a prepared model.
Share (10 minutes). Compare questions and identify evidence that could answer them.

ADAPT AND EXTEND

Younger learners can dictate observations and count wings. Older learners can compare two dated pictures of Sellers machines and explain what changed. Build in pairs, with an adult helping on small parts.

PRINT AND BUILD

Download the matching model at **restoringwhatwaslost.com/printables**. Print the model on US Letter at **Actual size / 100%**, single-sided; let the printer follow each page's orientation. Print this handout on plain paper. Use child-appropriate scissors and glue; adults should help with small cuts and difficult folds. The plane is a detailed build; reserve an additional session or prepare a demonstration model. It is a display model, not a flying toy.

Free to copy for classroom, community, and home learning. Suggested timing is an estimate, not a tested completion time.

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Name: _____ Date: _____

Look closely. This simplified display model follows a front-propeller arrangement documented in 1911.

1. Observe the display model. How many wings can you count? Where are the motor and propeller?

A dated source: A 1911 report in Flight places the motor and front propeller on the second wing from the bottom. This paper model simplifies that arrangement.

2. Name one observation supported by that source. Name one thing the paper model cannot tell you about a real flight.

3. The model wingspan is 6 inches. At 1 inch = 3 feet, what span does that represent? Show your work.

4. Sellers tried changing his designs. Write one question you would investigate and name the kind of source you would seek.

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WHAT TO LISTEN FOR

1. Four wings; motor is raised at the second wing from the bottom, with the propeller in front.
2. The motor position matches the 1911 description. The paper model cannot establish real flight performance, engine power, or exact construction.
3. 6 x 3 = **18 feet represented** by the model scale, not a newly verified measurement of an original aircraft.
4. Accept a specific question paired with a useful source: a dated photograph, technical drawing, flight report, or archive record.

KEEP HISTORY AND THE MODEL DISTINCT

Sellers experimented with changing arrangements. This model uses the front-propeller (tractor) layout described in 1911. Do not label it an exact replica of his first 1908 aircraft or assume all his aircraft had the same layout. The four wings alone do not prove that it could fly better than another design.

QUICK CHECK FOR UNDERSTANDING

Ask students to finish: "The model shows ____. To know ____, I would need ____." Credit a clear boundary between a visible feature and a historical claim.

SOURCES FOR THE TEACHER

Flight, October 14, 1911. Contemporary report and illustrations of the Sellers quadruplane. See the passage about the second wing from the bottom.

https://flyingmachines.ru/Site2/Crafts/Craft28570.htm

Smithsonian National Air and Space Museum. Matthew Bacon Sellers II Collection; archival context for Sellers and his experiments.

https://airandspace.si.edu/collection-archive/matthew-bacon-sellers-ii-collection/sova-nasm-1986-0050

Model and lesson design: Restoring What Was Lost History Workshop. Sources document the historical context; they do not endorse or certify these paper models. Free to print and copy for educational use.