

**Discipline:** Science and Technology  
**Standard Category:** Inquiry and Design  
**Lesson Focus:** Scientific method

PA Standard(s):	Related TESOL Standard(s):
3.2.7B: Apply process knowledge to make and interpret observations.	Goal 2: To use English to achieve academically in all content areas. Standard 3: Students will use appropriate learning strategies to construct and apply academic knowledge.

**Key Objectives in Accordance with TESOL Level:**

Pre-Conversational/ Beginning	Intermediate	Advanced
Students will be able to: • Complete a vocabulary quilt. Demonstrate understanding of key terminology.	Students will be able to: • Organize steps of the scientific method in the correct sequence and explain the process.	Students will be able to: • Explain the process and apply it to student generated situations or problems.

**Materials:**

1. Cards with steps of the scientific method with graphics
2. Problem cards
3. Vocabulary quilt graphic organizer
4. Scientific method graphic organizer

**Procedures:**

1. Introduce lesson by discussing a teacher-selected problem such as, "Your favorite pen is missing."
2. Introduce steps to the scientific method by talking through the problem. Repeat, the second time-sharing the steps of the scientific method as you discuss. Be sure the cards have simple graphics on them to secure understanding. Define the terms as you proceed.
3. In cooperative groups, select a problem card. As a group fill out the graphic organizer for the scientific method.
4. Share as a class the groups work. Discuss strengths and needs of each groups work.

**Assessment:**

Apply steps of the scientific method to a student-generated problem.

**Suggested Level:**  
Intermediate

**Lesson Focus:**  
Scientific method

**Teaching Strategies:**  
Whole group instruction

Cooperative groups

Lecture

Modeling

Application situations

**Assessment Strategies:**  
Vocabulary quilt

Sequence steps in the scientific method and written explanation

Problem solve using scientific method

**Beginning**

Complete vocabulary quilt

**Intermediate**

Sequence steps in the scientific method and explain each

**Advanced**

Explain the scientific method and apply it to a student generated situation or problem

**Notes:****Steps to the Scientific Method**

1. Stating the problem
2. Gathering information on the problem
3. Forming a hypothesis
4. Performing experiments to test the hypothesis
5. Recording and analyzing data
6. Stating a conclusion
7. Repeating the work

**Terms to Know:**

1. Method
2. Hypothesis
3. Data
4. All the beginning verbs in the scientific method

**Helpful websites for the Scientific Method:**

[http://phyun5.ucr.edu/~wudka/Physics7/Notes\\_www/node5.html](http://phyun5.ucr.edu/~wudka/Physics7/Notes_www/node5.html)

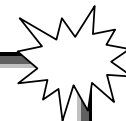
<http://www.selu.edu/Academics/Education/EDF600/Mod3/sld001.htm>

<http://www.isd77.k12.mn.us/resources/cf/SciProjInter.html>

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Vocabulary Quilt

As you read, write new words in the squares. Write the meanings of the words, too. If you can't figure out the meaning of a word, look it up in a dictionary.



Word: \_\_\_\_\_

Word: \_\_\_\_\_

XXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXX

Word: \_\_\_\_\_

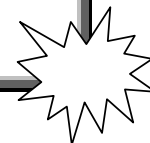
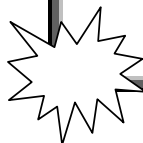
Word: \_\_\_\_\_

XXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXX

Word: \_\_\_\_\_

Word: \_\_\_\_\_



## The Scientific Method

Complete the five steps. Record your information in the spaces provided.

1. Ask a question	2. Come up with a hypothesis	3. Do an experiment tell what you did here	3. Record your data	5. Draw a conclusion