Documenting Scientific Learning

Algebraic thinking is being taught when teachers help children recognize **patterns**, make generalizations, and then use **symbols** to represent problems and their solutions. (J. V. Copley, The Young Child and Mathematics, Second Edition)

Attributes are characteristics or qualities of objects, such as color, position, roundness, shape, size, number of corners; e.g., a child notices that the plate is round.

Concrete Representation is a graph/table on which physical objects or pictures are arranged.

Data is **i**nformation, often in the form of facts or figures, obtained from experiments or surveys, used as a basis for making calculations or drawing conclusions.

Graphs display information in an organized manner.

Match means to pair items or objects that are identical.

Nonstandard measurement is a unit of measure whose values may vary such as a person's foot length, paper clips, paces, or blocks. It is unlike a standard unit of measure, such as inch or pound, whose values do not vary.

Numeral is the written symbol that represents a number; e.g., "seven" is the numeral for the number seven.

Operations are mathematical **processes** such as addition, subtraction, multiplication, and division.

Patterns are regular or repetitive forms, orders, or arrangements of objects, sounds, or movements.

Positional Terms are words that describe people, places, and objects in relation to other things or in the way an object is placed or arranged such as in, out, under, over, off, beside, behind, before, after, etc.; e.g., a child says, "I put the bowl on the table."
Quantity is an amount, measure or number; e.g., how many cars are in a box?

Set is a group of objects.

Spatial Reasoning is a sense of objects and how they relate to each other in terms of their position or direction.

Sort means to classify objects that share certain **attributes**; e.g., place all red blocks in one group and all blue blocks in another.

Standard Measuring Tools are **tools** such as rulers, yardsticks, scales, thermometers, to measure length, height, weight, temperature, etc.

Symbols are gestures or printed signs that represent quantities in mathematics; e.g., using three fingers to represent "three".

Building Children's Scientific Vocabulary

compare, comparing, like
more, less, equal
after, before, between
opposite
smaller, larger, same, similar, identical
quantity, how many in total
numeral, numbers
count, counting
group, grouping, sets
pair
balance
add, adding, subtract, subtracting
measure, dimension, volume, weight
length, width, height
circumference
pattern
graph
attributes of taste, touch, feel, sound, what they see

Vocabulary as it pertains to a specific investigation should never be dumbed down. For example, the jaw on a caterpillar is called a 'mandible'. Help children build their own vocabularies by modeling more complex language in your discussions.