ELICITING ANALYTIC THOUGHT

Types of Data Display (these are also problem solving strategies)

Concrete displays, Pictures, Lists, Tables, Charts, Graphs
Real (ie physical), pictorial, symbolic

Using Displayed Data for Decision Making

What day is today? (The calendar is a data display)
What do think will happen next?
Who's shoes are these?
Which is more/less?
Which is most popular?
Is there a (usually visual) pattern?

Extracting Information from Data

What is going on here? (what does the data tell us?)
Making sense of data (how does this work?)
Data from experiments
Tallies and Numbers and Piles
Combining data display with measurement

What Makes a Good Data Gathering Problem?

-- a confusing or interesting situation
-- something that students are motivated to do (ie they bring it up themselves)
-- the answer isn't obvious; there may not be a single answer
-- mathematical ideas are helpful
-- there are lots of different ways to get to an answer

Style

Encourage kids to find their own solution by their own methods.
Not everything is a problem; not everything has an answer. Some things are just interesting.
Encourage sharing and discussion. Set more than one group to work on the question.
Compare and contrast -- opinions, results, questions.
Encourage verbalization, drawing and acting out;
find ways for kids to show their thought processes.

Logical Reasoning

-- deeply connected to language development; use of words such as
and, or, if, if..then, equal, not, some, all
-- a way of thinking, not a collection of facts (or data)
-- comparison, sorting, observing
-- moving from idea (or fact) to conclusions
-- what do you think will happen (hypothesis);
what did happen? did it surprise you?