Chapter 2

Clearly Understand the Goal

2.1. In her book *Technical Writing: Principles, Strategies, and Readings* (Allyn & Bacon, 1997) Diana C. Reep discusses the following types of purpose:

1. to provide instruction,

2. to record information,

3. to inform decision makers,

4. to inform non decision makers,

5. to provide recommendations,

6. to persuade,

7. to generate interest in a topic.

Students could be encouraged to structure their answers along these lines.

2.2. A highly individual exercise. Some students from the "internet generation" may not know the difference between a journal and a magazine; these students can benefit greatly from an assignment to speak with a reference librarian.

2.3. Yes, there is no reason to think that just because you understood something all at once, that your reader can or will do the same.

2.4. A list of signpost headings is given in the *Quick Reference* appendix to the book.

2.5. The first definition (about building things) might be appropriate for a kindergarten class. It could seriously mislead high school or college students, however. The second definition is more or less standard (see your favorite dictionary for a more precise version). The third version might be the most accurate, as many people with the title "engineer" actually do not regularly solve problems using science and math (although they certainly had to do so in order to earn their academic degrees).

3

2.6. The phrases *plugging in* (for *substituting*) and *went away* (for *vanished*) are not appropriate in formal writing.

2.7. A few expected points would be

1. Choose the right hammer for the task; there are many different types of hammers that the student could discuss. The task could be pounding nails, demolition, working with chisels, shaping metal objects, cutting bricks, etc.

2. Understand the safety aspects before you start swinging. These include flying debris, the hammer rebounding back at you, and hitting your fingers.

3. Hold the hammer properly (firmly, by its handle, etc).

4. Pay attention to what you're doing.

5. Let the hammer do most of the work (don't swing too hard).

2.8. A highly individual assignment with many possible responses. Here is a table displaying the point forms of Maxwell's equations, the fundamental dynamical equations governing the electromagnetic field:

name	equation
Faraday's Law	$\nabla \times \mathbf{E} = -\partial \mathbf{B}/\partial t$
Ampere's Law	$\nabla \times \mathbf{H} = \mathbf{J} + \partial \mathbf{D}/\partial t$
Gauss's Law	$\nabla \cdot \mathbf{D} = \rho_V$
Magnetic Source Law	$\nabla \cdot \mathbf{B} = 0$

The following table provides values of $J_n(\beta)$, the Bessel function of the first kind, order n, argument β (useful in communication theory).

$n\downarrow$	$\beta = 0.5$	$\beta = 1$	$\beta = 2$	$\beta = 3$	$\beta = 4$
0	0.9385	0.7652	0.2239	−0.2601	−0.3971
1	0.2423	0.4401	0.5767	0.3391	−0.06604
2		0.1149	0.3528	0.4861	0.3641
3			0.1289	0.3091	0.4302
4				0.1320	0.2811
5					0.1321

Tell students to pick something they're interested in and use their imagination!

4