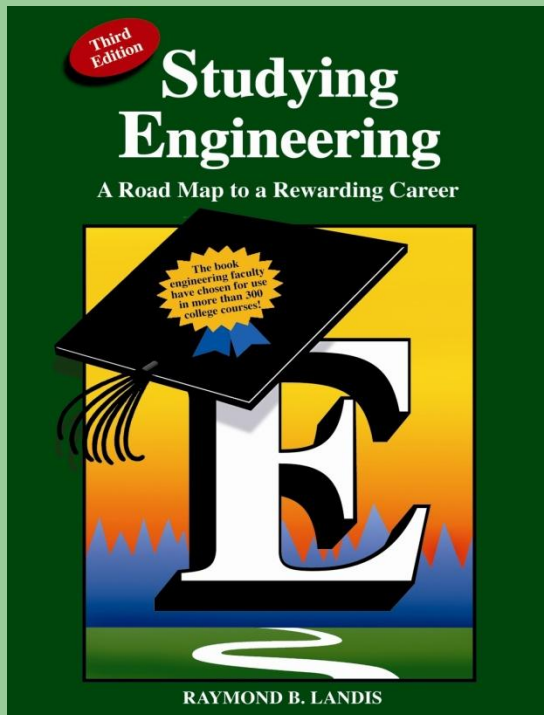# Chapter 5

Making the Learning Process Work for You

Chapter Overview

- Making effective use of your peers
- Problem solving

Class Poll on Collaborative Learning

- How many of you spend some fraction of your study time on a regular basis studying with at least one other student?

- How many of you spend virtually 100 percent of your study time studying alone?

- For those who study alone – "Why don't you study with other students?

- For those who study with other students – "How is it working for you?"

Collaboration and teamwork are two major factors in the real work place

Benefits of Group Study

- You'll be better prepared for the engineering "work-world"
- Higher achievement and greater productivity
- More caring, supportive and committed relationships
- Greater psychological health, social competence and self-esteem

Analytical Problem Solving

Step 1 - Understand the problem

Step 2 - Devise a plan

Step 3 - Carry out the plan

Step 4 – Check solution

Problem solving strategies

Use a formula

Solve an equation

Draw a diagram

Make a table

Guess and check

Eliminate possibilities

Solve a simpler problem

Use direct reasoning

What strategies to use?

You have 8 balls identically looking, but one of them is heavier than the rest. You have a simple two-armed scale, and are allowed to use the scale exactly two times. How can you identify the heavier ball?

Use a formula

Solve an equation

Draw a diagram

Make a table

Guess and check

Eliminate possibilities

Solve a simpler problem

Use direct reasoning

What strategies to use?

One train leaves Los Angeles at 15mph heading for New York. Another leaves from New York at 20mph heading for Los Angeles on the same track. If a bird, flying at 25mph, leaves from Los Angeles at the same time as the train and flies back and forth between the two trains until they collide, how far will the bird have traveled?

Use a formula

Solve an equation

Draw a diagram

Make a table

Guess and check

Eliminate possibilities

Solve a simpler problem

Use direct reasoning

What strategies to use?

You have 26 constants labeled A through Z.

Each constant is assigned a value:

A = 1; the rest of the values equal their position in the alphabet raised to the power of the preceding value. So, B = 2 ^ (A's value), or B = 2^1 = 2, C = 3^2 = 9, … Find the exact numerical value to the equation:

$(X - A) * (X - B) * (X - C) * ... * (X - Y) * (X - Z)$

What strategies to use?

You have 5 jars of pills. Each pill weighs 10 gram, except for contaminated pills contained in one jar, where each pill weighs 9 gm. Given a scale, how could you tell which jar had the contaminated pills in just one measurement?

Use a formula

Solve an equation

Draw a diagram

Make a table

Guess and check

Eliminate possibilities

Solve a simpler problem

Use direct reasoning

What strategies do you use to solve problems?

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