Cooperative Group Activities

1. Out-of-class activity Collect your own process data and analyze them using the methods of this chapter. It would be ideal to collect data from a real manufacturing process, but that may be difficult to accomplish. Instead, consider using a simulation or referring to published data, such as those found in an almanac. Obtain a printed copy of computer results and write a brief report summarizing your conclusions. Here are some suggestions:

- Shoot five basketball foul shots (or shoot five crumpled sheets of paper into a wastebasket) and record the number of shots made; then repeat this procedure 20 times. Use a p chart to test for statistical stability in the proportion of shots made.

- Measure your pulse rate by counting the number of times your heart beats in 1 min. Measure your pulse rate four times each hour for several hours, then construct appropriate control charts. What factors contribute to random variation? Assignable variation?

- Search newspapers or the Internet for the past 12 weeks and record the closing of the Dow Jones Industrial Average (DJIA) for each business day. Use run and control charts to explore the statistical stability of the DJIA. Identify at least one practical consequence of having this process statistically stable, and identify at least one practical consequence of having this process out of statistical control.

- Find the marriage rate per 10,000 population for several years. (See the *Information Please Almanac* or the *Statistical Abstract of the United States*.) Assume that in each year 10,000 people were randomly selected and surveyed to determine whether they were married. Use a p chart to test for statistical stability of the marriage rate. (Other possible rates: death, accident fatality, crime.)

2. In-class activity If the instructor can distribute the numbers of absences for each class meeting, groups of three or four students can analyze them for statistical stability and make recommendations based on the conclusions.

3. Out-of-class activity Conduct research to find a description of Deming's funnel experiment, then use a funnel and marbles to collect data for the different rules for adjusting the funnel location. Construct appropriate control charts for the different rules of funnel adjustment. What does the funnel experiment illustrate? What do you conclude?