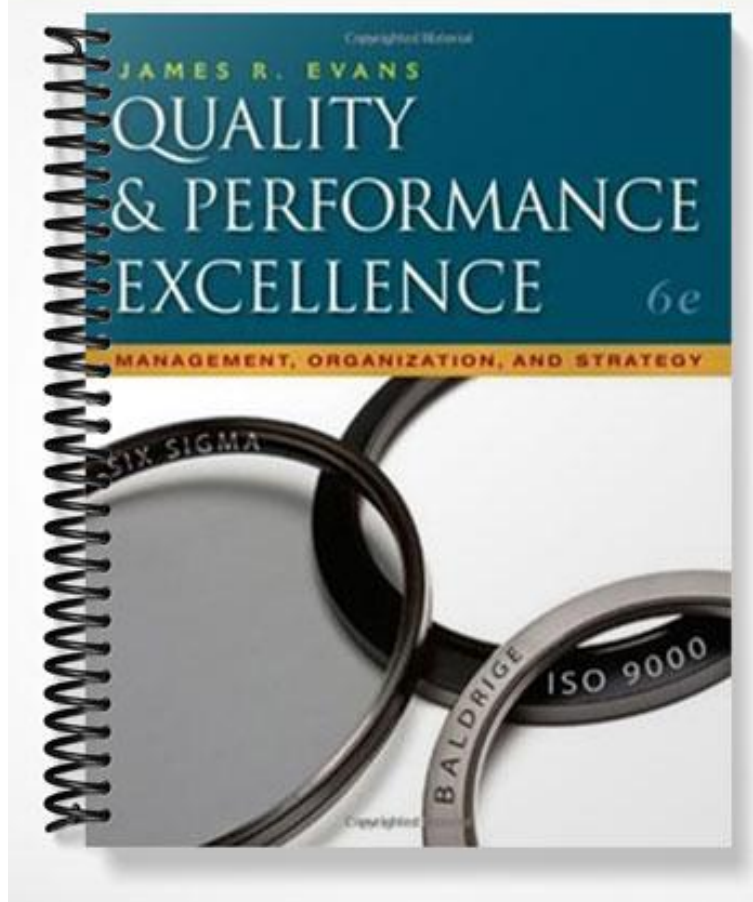


SOLUTIONS MANUAL



INSTRUCTOR'S NOTES TO ACCOMPANY

QUALITY AND PERFORMANCE EXCELLENCE: MANAGEMENT, ORGANIZATION AND STRATEGY, Sixth Edition

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These notes are intended to provide guidance for discussion of the questions and cases at the end of the chapters. Most questions have been purposely designed to be open-ended, so there is no one correct answer. Rather, their purpose is to stimulate discussion and make the concepts of total quality more personal to the student. Other questions are designed to ensure that students have grasped the basic concepts in the chapter and are basically review in nature.

Chapter 1: Introduction

Review and Discussion Questions

- 1. Describe how the specific practices of Poudre Valley Health System in the opening Performance Excellence Profile support the principles of performance excellence.**

Customer and stakeholder focus: diversified services; listening to customers to improve ER layout and patient rooms; Getwell Network

Process orientation: innovative systems and technologies; performance improvement system called Global Path to Success

Employee engagement and teamwork: interdisciplinary teams; Meditech Information System
Management by fact: Balanced Scorecard system and action plans to address performance issues

Strategic focus: mission – to remain independent while providing innovative, comprehensive care of the highest quality, and exceeding customer expectations; vision – to provide world-class health care; partnering relationships

Visionary leadership: high-performance culture; communication mechanisms;

- 2. Explain why quality became the most important issue facing American business in the 1980s. In addition to economic competition from Japan, what other factors may have contributed to the importance that quality has assumed?**

Quality became an important business issue because of the fall of American competitiveness in world markets, and particularly, the economic competition from Japan and other Asian countries. During the preceding decades, American manufacturers focused more on quantity of output rather than quality. As the rate of quality improvement in Japan was faster than that in America, the overall quality of goods produced in Japan exceeded those produced in the U.S. sometime during the 1970s. Other factors include increasingly quality-conscious consumers, rapid advances in technology that required better attention to quality, and growing realization that managers were focused on the wrong goals and objectives.

- 3. Cite several examples in your own experience in which your expectations were met, exceeded, or not met in purchasing goods or services. How did you regard the company after your experience?**

Everyone has had such experiences. Getting students to share these provides a better sense of how consumers define quality. This question can be used to develop and discuss alternative viewpoints and definitions of quality.

- 4. How might the definition of quality apply to your college or university? Provide examples of who some customers are and how their expectations can be met or exceeded.**

Schools are ripe for quality improvement. Students and faculty have many examples. It is also important to note that viewpoints differ at different levels; for example, in the classroom, within a specific college, and in the university as a whole. Much controversy exists about who are the customers of a school. This discussion leads easily to conflicting needs and objectives and raises questions about how customers' needs can be satisfied. You might wish to investigate Baldrige education winners. Application summaries are generally available on Baldrige winners' web sites. Start at www.baldrige.nist.gov and click the link for Award Recipients.

5. What implications do you think the forces that will influence the future of quality (see the box “What Will Influence the Future of Quality” in the chapter) will have on management practice?

Students should try to develop ideas on how these trends will change management behavior; for example, how quality issues in China might change supply chain management. As another example, social responsibility and environmental concerns are reflected by the current focus on sustainability and environmental protection; students can discuss issues of global warming as it relates to process design, recyclability as it relates to product design, and so on. A good exercise would be to ask students to create a matrix where the rows are the forces and columns are functional management decision areas such as OM (perhaps broken down by product/service design, supply chains, etc.), marketing, finance, and so on, and to identify management practices that might be changed as a result of these factors.

6. Think of a product with which you are familiar. Describe the eight “multiple quality dimensions” (e.g., performance, features, and so on) for this product that are listed in this chapter.

This question is designed to get students to think about the different dimensions. The results can be used to prioritize needs (as a good lead-in to QFD or the development of customer survey questionnaires, for instance).

7. What might the eight “multiple quality dimensions” mean for a college or university? For a classroom?

As in Question 4, this enables students to apply the concepts to something they all know about and in which they have a vested interest. A key issue is what are the "products" and services a school provides.

8. Explain the differences between manufacturing and service organizations and their implications for quality.

Most students would probably have seen this in an introductory operations management course. These differences include higher labor intensity, immediate consumption and lack of storage of the "product," generally a higher degree of customization, a large volume of transactions, time sensitivity, and an increased reliance on the human element. The quality dimensions important to customers are different; thus, quality efforts are also different. Key

issues are described in the chapter in the Quality in Services section.

9. Describe the key elements of total quality.

The definition used in the chapter is: Total Quality (TQ) is a people-focused management system that aims at continual increase in customer satisfaction at continually lower real cost. TQ is a total system approach (not a separate area or program) and an integral part of high-level strategy; it works horizontally across functions and departments, involves all employees, top to bottom, and extends backward and forward to include the supply chain and the customer chain. TQ stresses learning and adaptation to continual change as keys to organizational success.

TQ is described by its principles, practices, and techniques. Principles are the foundation of the philosophy, practices are activities by which the principles are implemented, and techniques are tools and approaches that help managers and employees make the practices effective.

10. How might you apply the concepts of TQ to your personal life? Consider your relations with others and your daily activities such as being a student, belonging to a fraternity or professional organization, and so on.

Students should consider issues such as Who is my customer? How do I plan to be a "quality person"? What do I do to continuously improve? (Good examples include class preparation and interpersonal relations.) The instructor may wish to consult some of the writings of Harry Roberts, such as "Using Personal Quality Checklists" in *Quality Progress*, June 1993, p. 51, or Harry Forsha, *The Pursuit of Quality Through Personal Change*, Milwaukee: American Society for Quality Control, 1992. Many articles in *Quality Progress* over the last few years have dealt with these issues. ASQ has a nice search engine. Go to www.asq.org and select the Publications link.

11. Why is a customer focus a critical element of a high-performing organization?

Customers are the judges of quality. No customers, no sales, no jobs. Simple idea, but awfully difficult for many organizations to see and implement.

12. Make a list of your personal "customers." What steps might you take to understand their needs and build customer engagement?

This question is designed to make quality more personal -- parents, spouses, roommates, teachers, etc. The instructor might try to relate these personal issues to those of a company like Coca-Cola.

13. Cite an example in which you did not purchase a product or service because it lacked "dissatisfiers" as defined in the chapter. Cite another example in which you received some "exciters/delighters" that you did not expect.

This question is similar to #3, but focused on products. It will help elicit key dimensions that

customers want and help students realize the necessity of both meeting customer expectations and trying to anticipate and exceed them. The instructor might comment that one of the goals of the course is to transform students into "customers from hell."

14. In what ways might the lack of top management leadership in a quality effort hinder or destroy it?

Top management has the ultimate responsibility for instilling quality among their employees. Role models are powerful influences. All talk and no action can easily kill a quality program. These issues are discussed in the Strategic Planning and Leadership subsection.

15. Explain the various areas within an organization in which continuous improvement and learning may take place.

Everywhere! Product design, manufacturing, engineering support, sales, etc. It is easy to establish the importance of every activity in a company in meeting both internal and external customer needs. No activity is immune to continuous improvement, and the students should be encouraged to provide many examples.

16. Why is measurement important in an organization pursuing performance excellence?

Problem solving should be based on objective data and facts. Measures are needed to understand the problems and opportunities for improvement and for monitoring progress. Many executives have stated that "you can't manage what you can't measure," although Deming rejects this statement, stating that "the most important figures are unknown or unknowable." These two points of view can be made as a basis for class discussion and debate.

17. Examine some process with which you are familiar. Make a list of ways that the process can be measured and improved. What difficulties might you face in implementing these ideas?

Students should be encouraged to select simple processes with which they are very familiar and understand well. This question can lead to how to describe a process (see Chapter 3 on tools). Key issues that should be addressed are what measurements to take. Many organizations fail in this regard, taking unnecessary measurements that are useless for decision making, or failing to take critical measurements that address customer needs. One way of approaching this is by a QFD-type matrix, listing customer needs on the rows and measurements on the columns. An assessment of how well the measures address customer needs will allow you to choose the right ones or determine if any important ones are missing.

18. Describe the three ways of viewing teamwork.

Vertical, horizontal, and interorganizational. See discussion in the Empowerment and Teamwork subsection.

19. Describe some possible ways in which vertical, horizontal, and interorganizational teamwork can be applied at a college or university.

This will help students better understand the differences among the three types. How much teamwork in a university involves its customers and suppliers, or cuts across colleges and departments, or engages two-year as well as four-year programs? If your school is typical, the answer is probably obvious. It is easy to brainstorm many opportunities.

20. What is employee engagement? How does it differ from empowerment? How might an employee really know that he or she is truly empowered? How might an organization know that employees are truly engaged?

Employee engagement simply means that workers have a strong emotional bond to their organization, are actively involved in and committed to their work, feel that their jobs are important, know that their opinions and ideas have value, and often go beyond their immediate job responsibilities for the good of the organization. Empowerment is giving people the authority and responsibility to make decisions that affect the welfare of their customers. Indicators of empowerment include the freedom to take risks, lack of bureaucratic red tape, management actions and defense of employee decisions, management through leadership instead of control, financial support, etc. Engagement is manifest in doing things without being asked or directed, volunteering suggestions for improvement, willingly helping co-workers, and so on.

21. Have you ever felt restricted in your work because of a lack of empowerment? Can you cite any experiences in which you noticed a lack of empowerment in a person who was serving you? Why is this such a difficult concept to implement in organizations?

Most students have had this experience, particularly in part-time or summer jobs. How about as a student? How much empowerment do instructors typically give students? (How much do *you*?) Inhibitors include a lack of trust, fear of relinquishing control, and the reward system itself.

22. How does TQ differ from agency theory?

As discussed in the section in the chapter, agency theory takes a rather sterile approach to organizational theory and removes people from the system. Differences include how people are motivated, alignment of goals, sharing information, time perspective, risk taking, and role of leadership. We have never heard a top executive – especially from Baldrige winning organizations – state that people are *not* the key to their success. Indeed, what we have observed is simply that successful organizations go to great lengths to treat their employees as valued people.

23. Explain the mechanistic, organismic, and cultural models of organizations, and how TQ is similar to or different from them.

See Table 1.1 and its associated discussion for a summary of the differences and similarities.

24. Investigate recent quality initiatives in either health care or education. What have these organizations learned from business? What unique issues do they face with respect to quality? How are they trying to overcome them?

Many articles have appeared, especially since health care and education were made Baldrige categories in 1999. The American Society for Quality journals, *Quality Progress* and the *Quality Management Journal*, are good sources of reference. Winning practices of Baldrige winners also provide considerable insight (however, to date we are still waiting for a health care recipient). Basically, these organizations that pursue TQ have adopted many of the practices used by their business counterparts and related to the basic TQ principles. Some of the unique issues they face are intense public scrutiny, dealing with professionals such as doctors and professors, and long-standing traditions that make change difficult. Overcoming these issues requires dedicated leadership, a commitment to improvement, and a framework for change, such as the Baldrige criteria or a similar philosophy of TQ.

25. Discuss the implications of the following statements with respect to introducing TQ principles in a college classroom. Do you agree with them? How do they reflect TQ principles? What changes in traditional learning approaches would they require for both students and instructors?

- a. Embracing a customer focus doesn't mean giving students all As and abandoning standards.
- b. If students fail, the system has failed.
- c. Faculty members are customers of those who teach prerequisites.
- d. Treating students as customers means allowing students to choose not to come to class.
- e. Completing the syllabus is not a measure of success.
- f. New and tenured instructors should visit each other's classrooms.
- g. Eliminate performance appraisals based on classroom evaluations.
- h. No matter how good the test, luck will be involved.

You might wish to consult the article referenced in the endnote from which this question was adopted. Students are usually quite outspoken on such issues and this question is good fodder for class discussion. Most discussion would center on the principle of "learning-centered education," which should be the major objective of any classroom. As in the previous question, traditions and learning from one's mentors (i.e., senior faculty) often promulgate the status quo and inhibit innovation and change.

26. Today, both manufacturing and service depend greatly on information technology and the Internet. What would be some ways of evaluating the quality of a Web site?

Content that is intuitive and understandable, accurate, and current. This means that the design of the site must meet the customers' requirements, not the company's. The web site must be

easy to navigate and locate information (such as ways to contact the company!). If customers misinterpret information and make a wrong purchase, expect returned products and non-returning customers. Product offerings and price data change quickly, and need to be kept accurate and current. One of the author's unfortunate experiences involved purchasing an accessory listed as compatible with a PDA only to find out that it didn't work, leading to wasted time getting a return authorization, repackaging, and returning the product (the Web site was corrected a few weeks later). Technical issues might include the speed and reliability of the web site, as reflected by page loading rates, and the number of clicks required to navigate through the site, and server uptime/downtime.

CASES

U.S. Water Resource Agency – Flagstaff District

1. As a public not-for-profit agency, Flagstaff District has which customers?

Key customers might include the navigation industry; Federal, State, and local government entities; cost-sharing partners; individual and commercial developers; recreation users; and special-interest groups.

2. How might the district define quality? How could it use this definition to evaluate its success in “competing” with other entities?

One of the hardest concepts to translate from the private sector into the public sector is that of “competition.” In many cases, the services provided to the public by an agency of the Federal Government can be obtained from only that Government agency. Historically, this has led to the unfortunate perception that Government service providers are “the only game in town,” lessening the concern for, or need to understand, customer needs, desires, or drivers of satisfaction. However, nothing could be further from reality. As a Government agency, FD “competes” in three major ways: (1) with private companies for projects or portions of projects; (2) with other districts for reimbursable work; and (3) through outsourcing studies that determine whether work will continue to be accomplished by Government employees or will be contracted to private companies. To compete or compare favorably on any project, FD must be

- On Time—within the customer's time frame
- On Target—providing desired outcomes to the customer
- On Budget—within the budgetary constraints of the customer or of available funding.

These requirements can provide an operational definition of quality.

The Reservation Nightmare

1. Summarize the service failures associated with this experience.

Basically, everything the company did was a service failure, from the complexity of the

menu, excessive wait time, repeating the 19-digit customer service number, and transfer to another operator without response.

2. What might the travel agency have done to guarantee a better service experience for Mr. Harrington? How do your suggestions relate to the TQ principles?

Students usually identify numerous improvements including simplifying the messaging system, better staffing, cross-training operators, and so on. The company needs to better understand customer requirements (How long of a wait is acceptable? How complex system do customers tolerate?), improve its processes (eliminate redundancy, tie the 19-digit input to the operator's computer), use data better (determine how many customers use each feature, for example), and empower and train employees to be able to answer a wider variety of questions.

Santa Cruz Guitar Company

Based on this tour of SCGC, can you identify how the operations and quality practices reflect the principles of TQ?

- (1) customer and stakeholder focus – attention to detail and perfect tone; hand-making necks to customer specifications; adjustments to optimize feel and playability
- (2) a process orientation supported by continuous improvement and learning – manufacturing layout and inspection activities; detailed process requirements (such as humidity control and use of CNC machining for critical dimensionality)
- (3) employee engagement and teamwork – small staff of experienced and empowered luthiers who provide personal attention and hand-crafting of the guitars; recruiting luthiers who want to work in a team environment and have a passion for guitar making; encouraging workers to enhance their skills
- (4) management by fact – luthiers recording what they did while building tops and using the records to duplicate outstanding results
- (5) a strategic focus on quality as a source of competitive advantage – small scale operation with a focus on high quality; web page where owners can ask questions
- (6) visionary leadership that views performance excellence as an integrated system – lack of a formal quality department so that quality is understood to be everyone's job; encouraging training and even encouraging workers to open their own businesses.

Chapter 2: Frameworks for Quality and Performance Excellence

Review and Discussion Questions

1. Summarize the Deming management philosophy. Why has it been controversial?

The philosophy is summarized in the concepts of profound knowledge and the 14 Points. The instructor might wish to consult Deming's recent book *The New Economics* (Cambridge: MIT Center for Advanced Engineering Study, 1993) for more details on this philosophy. It is controversial because of Deming himself (gruff and refusing to provide "solutions"), but moreover because it requires radical changes in traditional management styles. Many of the 14 Points are quite controversial, and the instructor should facilitate a discussion of why managers resist adopting them. However, as time has passed, it appears that many of Deming's points have been adapted by modern organizations. Thus, you should consider this in historical context and engage students in a discussion of what appears to have been integrated into modern organizations.

2. Explain the 14 Points in the context of the four categories of Profound Knowledge.

Many relationships exist. A suggested approach is to use a relationship matrix in which the rows correspond to the 14 Points and the columns correspond to the four elements of Profound Knowledge. Entries in the matrix can reflect whether or not the point relates to the element, or perhaps the strength of association (strong, weak, none). For example, Point 4, relates strongly to understanding the system and variation; point 3 to theory of knowledge; and point 12 to psychology. A good in-class exercise for discussion and debate.

3. Why doesn't the Deming Chain Reaction terminate with "Increased Profits"? Would this contradict the basis of Deming's philosophy?

Deming believes that profits should not be the ultimate goal of business. Business should help its employees sustain a productive and happy life. If this is done, and customer needs are met, profits should follow. The Federal Express motto is "People, Service, Profits" -- in that order -- indicating that employees come first, customers next, and profits third in evaluating any business decision. It *can* be done!

4. Provide an example of a system with which you are familiar and define its purpose. Examine the interactions within the system and whether the system is managed for optimization.

It is not always easy to define the purpose of an organization. Many companies do, and those that have seem to be able to achieve success in TQ. These examples should focus on the students ability to see the interrelationships within the system and whether actions taken are for the good of the system as a whole or suboptimal. Both the instructor and students are encouraged to read Peter Senge, *The Fifth Discipline*, New York: Doubleday/Currency, 1990. This book tells much about systems and their interactions, how they self-destruct, and

how they improve.

5. Describe a process with which you are familiar. List some factors that contribute to common cause variation. Cite some examples of special causes of variation in this process.

Many examples exist, both in students general experience with business as customers and in daily life. Make sure that students understand what a process means. Some ideas include the process of preparing for class, preparing for a test, preparing for a job interview, eating breakfast, coordinating a fraternity meeting, etc.

6. How does the theory of knowledge apply to education? What might this mean for improving the quality of education?

Should schools copy the best? Should a public, urban university try to emulate Stanford or Harvard? Students might draw upon some contemporary issues about public education that dominate the news. Another issue is how to teach. The instructor might discuss Bloom's taxonomy of learning and focus on its implications for quality education.

7. Explain the implications of not understanding the components of Profound Knowledge as suggested by Peter Scholtes.

Basically, Scholtes' insightful comments define the mistakes and misunderstandings that managers routinely make when making decisions by gut and instinct rather than with facts, data, and a clear understanding of context. With systems, for instance, lack of understanding leads to suboptimization and misalignment of the parts of the organization with respect to strategic objectives. With variation, it leads to knee-jerk reactions rather than rational thought. With psychology, it can create mistrust among the workforce and lack of enthusiasm and loyalty to the organization. And, with theory of knowledge, it can lead to stagnation and ultimate business failure.

8. Extract three or four key themes in Deming's 14 Points. How might the 14 Points be grouped in a logical fashion?

Some major themes are manager-worker relations, cooperation, joy in work and self-esteem, elimination of seat-of-the-pants decisions, quantitative management, revolution of management philosophy, and organizational purpose. There are many ways the 14 Points can be assessed against these and other themes. A matrix relationship would be a good exercise to facilitate discussion.

9. What implications might the 14 Points have for college education? What specific proposals might you suggest as a means of implementing the 14 Points at your school?

What is the purpose of the university (college, school)? Most faculty and administrators cannot agree on this. Is it managed as a system? Is there continuous improvement? Are

faculty trained to teach? What constitutes fear in the university (among faculty, staff, and students)? How are teams used? What about numerical quotas (promotion and tenure models) and MBO? What processes rob faculty and students of joy in work? Who is responsible among all the constituencies? This question alone can constitute a term project.

10. Discuss the interrelationships among Deming's 14 Points. How do they support each other? Why must they be viewed as a whole rather than separately?

Deming always insisted that these were all or nothing; you can't just pick and choose which points to implement. The focus here is on systems thinking. For example, Point 7 is related to Points 1, 2, 5, 8, 9, 10, 11, 12, 13, and 14, as leadership is necessary for these to occur. A relationship matrix among these would be rather dense, so discussion might focus on one or two points.

11. The following themes form the basis for Deming's philosophy. Classify the 14 Points into these categories and discuss the commonalities within each category.

- a. Organizational purpose and mission**
- b. Quantitative goals**
- c. Revolution of management philosophy**
- d. Elimination of seat-of-the-pants decisions**
- e. Cooperation building**
- f. Improvement of manager-worker relations**

There is no one correct answer here. Many of the points fall into multiple categories. Good application for an affinity diagram exercise with Post-It Notes. One suggested answer:

Organizational purpose and mission: 1, 5
Quantitative goals: 3, 4
Revolution of management philosophy: 1, 2, 5, 6, 7, 11, 14
Elimination of seat-of-the-pants decisions: 4
Cooperation building: 7, 9, 12
Improvement of manager-worker relations: 6, 7, 8, 10, 11, 12, 13

12. Summarize Juran's philosophy. How is it similar to and different from Deming's?

Many themes of Juran's philosophy are the same as Deming's. The major differences are that Juran works within traditional management cultures as opposed to a radical transformation and has a focused approach for achieving the goals; that is, he is more pragmatic and less philosophical.

13. What is Juran's Quality Trilogy? Is it any different from management approaches in other functional areas of business, such as finance?

Quality planning, quality control, and quality improvement. The trilogy was proposed by Juran because of the financial analogy, making it easier for managers to accept.

14. What implications might Juran’s Quality Trilogy have for colleges and universities? Would most faculty and administrators agree that the emphasis has been on quality control rather than planning and improvement?

In most any organization, the major emphasis is on control, with less on improvement and even less on planning. Discussion might focus on what planning, control, and improvement actually mean for a college or university.

15. How could you apply Juran’s Quality Trilogy to improve your personal approach to study and learning?

Start with your process - plan it out. Develop adequate controls to check and monitor performance. Systematically seek ways to improve both performance and the process. Very few students have ever thought about this.

16. Summarize the Crosby philosophy. How does it differ from Deming and Juran?

See the section in the chapter.

17. Which quality philosophy—Deming, Juran, or Crosby—do you personally feel more comfortable with? Why?

While this author leans toward Juran, many students initially choose Deming. It might be interesting to study the responses to this question in terms of Myers-Briggs typology. You might even get a publishable paper. (Just give proper credit!)

18. Summarize the framework of the Baldrige Award. What are its key philosophical underpinnings?

See the framework in the text. The instructor should have the current year's criteria for discussion. The emphasis should be on the systems aspect and linkages among the criteria categories. Underpinnings are explained in the guidelines through the "core values." These are discussed in the context of organizational culture in Chapter 11.

19. Describe the key issues addressed in each of the seven categories of the Criteria for Performance Excellence.

This can be extracted directly from the Criteria.

20. What might be some “best practices” evident in the Performance Excellence Profile of Baptist Hospital? How do these practices align with the first six categories of the Baldrige Award Criteria for Performance Excellence?

Leadership category: flat leadership system and open door office; no secrets environment; daily line-up

Customer focus category: standards of performance; scripting

Strategic planning category: pillars of operational excellence; goal and action plan development

Workforce focus category: Bright Ideas program

Measurement, analysis and knowledge management category: care-clinical accountability report; hospital information system; MIDAS system

Process management category: air ambulance service

21. How do the Baldrige criteria support Deming's 14 Points?

See the section in the chapter on The Baldrige Criteria and the Deming Philosophy. Students might also be asked to point to specific questions in the criteria for more clarification on the ideas suggested in this section.

22. Explain the differences among the Baldrige, European, Canadian, and Australian Quality Awards.

The frameworks are quite similar. All emphasize the importance of leadership, customer satisfaction, processes, and people, although the specific categories are somewhat different. An interesting companion exercise is to obtain the current criteria and map the specific relationships to Baldrige. This can shed insights into key cultural differences, particularly if the instructor wants to focus on international issues.

23. Prepare a list of specific actions that a high-scoring company in the Baldrige Award process might take in each of the seven categories. How difficult do you think it is for a company to score well in all the categories?

One approach to doing this is to study the practices of past winners. Application summaries are available through the corporate relations offices of all the companies (some may charge a nominal fee) or their web sites. Contact addresses may be obtained through the Baldrige office at the Department of Commerce or its web site www.quality.nist.gov. Several books discuss this in detail, particularly Mark Graham Brown (*Baldrige Award Winning Quality*, Milwaukee: ASQC Quality Press, 1991 and subsequent revisions). This book is usually updated each year to reflect changes in the criteria. As just one example, in the Senior Executive Leadership item, key indicators might include:

- senior leaders participate in quality improvement teams
- senior leaders have face-to-face interaction with customers and suppliers
- they budget adequate resources to quality initiatives
- they make presentations on quality to professional groups and publish articles
- they communicate the firm's mission and quality policy through various media and so forth.

Most companies are strong in the leadership, HRM and technical issues. Many are weak in information and analysis and strategic planning. In teaching executive courses, one of the authors has consistently found (as has Juran) that most managers feel their companies are weakest in the planning functions. The Baldrige criteria are stringent. The difficulty of scoring well in each category is reflected in the fact that winners typically score only in the

700s overall.

24. Create a matrix diagram in which each row is a category of the Baldrige Award criteria organizational maturity with respect to quality:

- traditional management practices;
- growing awareness of the importance of quality;
- development of a solid quality management system; and
- outstanding, world-class management practice.

In each cell of the matrix, list two to five characteristics that you would expect to see for a company in each of the four situations above for that criteria category. How might this matrix be used as a self-assessment tool to provide directions for improvement?

This is a great exercise for students to examine the Criteria questions for increasing levels of maturity. It provides a structure for organizations to develop and refine their practices and processes. For example, it makes little sense to measure customer satisfaction if a company doesn't first understand customer groups, needs, and requirements. Thus, on the maturity scale, this would be one of the first things to do. Traditional management practices might not actively seek this information or use manager opinions as to what customers want. The scoring guidelines provide one approach for helping to answer this question. Use the descriptors as follows: 0% traditional, 10-30% growing awareness, 40-60% solid system; 70% and higher world class. These roughly correspond to scores achieved by Baldrige and state award applicants.

25. Discuss the implications of the Baldrige criteria for e-commerce. What are the specific challenges that e-commerce companies face within each category of the criteria?

Clearly the customer, information, and process categories would take the most emphasis as providing guidelines on how to be a successful e-commerce organization. The more interesting challenges revolve around strategy, leadership, and people. Students might draw upon recent articles published about Jeff Bezos at Amazon.com and Meg Whitman at eBay (one *Fortune* article discussed how eBay evaluates a broad array of "balanced scorecard" measures). The ultimate conclusion is that the criteria can provide a good framework for such companies.

26. Explain the benefits of and controversy surrounding ISO 9000. Can ISO 9000 lead an organization to world-class quality?

The major benefits are in establishing a basic quality assurance system and meeting market pressures for registration. The biggest objection to ISO 9000 is that some companies simply use it for marketing purposes and don't follow the spirit for which it was intended, although the 2000 release does address many of the objections of the 1994 version. Nevertheless, it still lacks the complete management framework and systems thinking that is characteristic of Baldrige, and focuses principally on documentation and processes.

27. Map the elements of ISO 9000:2000 against the Baldrige criteria. How are they similar? How are they different?

This would require a bit of research to identify the particulars. We suggest starting with www.iso.ch web site. Many ISO consultants' web sites contain specific information about the ISO elements. This exercise will clearly show the differences between Baldrige and the ISO standards.

28. Search the Web for detailed information about ISO 9000 requirements. Although the language of the standard appears to be primarily for manufacturing, try to rewrite some of the requirements in language that would provide a framework for a typical public school system to use the standard.

See question 9 as a start. While the Baldrige has criteria versions for different sectors, ISO is written in sterile manufacturing language which can be a challenge for education, health, and other service organizations. Nevertheless, a wide variety of organizations have received ISO certification. Trying to rewrite the requirements would help students to really understand what they are about.

29. Describe the evolution of Six Sigma. What impact has it had on General Electric? What differences must be addressed in applying Six Sigma in service organizations?

See the text for details. Students might be challenged to find out where Six Sigma is going today and whether it indeed will be sustainable.

30. What are the similarities and differences among Six Sigma, ISO 9000, and the Baldrige approaches?

See the last section of the chapter.

31. What philosophical changes might be required to implement a Six Sigma process in a hospital, government agency, or not-for-profit organization? Are they likely to be easy or difficult?

Applying Six Sigma requires a process-oriented, information-intensive focus, which many of these organizations typically lack, except perhaps, for hospitals. Thus, implementing Six Sigma should be relatively easy for hospitals, and many examples exist. However, most government and non-profit agencies lack good systems for measurement and processes which will most likely make Six Sigma much more challenging. Training employees in the tools will also be more challenging.

32. How might the principles of Six Sigma be used to improve a quality process in a school or university? What elements of the Six Sigma philosophy might be difficult to obtain support for in the educational environment? Why?

There is not clear answer to these questions, as every school will be different. Educational

institutions will most likely find it more difficult to implement good measurement systems and get professional employees to buy in to the process and undergo training.

33. Find a company that has implemented a Six Sigma process. What changes have they made in the organization in order to develop their Six Sigma approach?

This is a good project to emphasize implementation issues. Many of these tie into subsequent chapters. Some very good papers can be found in ASQ's *Six Sigma Forum* magazine, *Quality Progress*, and its annual Quality Congress Proceedings.

CASES

The Technical Support Clerk

1. What is Melissa's job as opposed to her job description? What might Deming say about this situation?

Many students will describe Melissa's job description as given in the case. Her "job" is really to satisfy customers. Note the difference between one's job and a job description. Deming would have said that the numerical quota is contrary to the requirements that her supervisor states. This situation also goes against Deming's point on "pride of workmanship" because she has inadequate technology to do her job.

2. Drawing upon Deming's principles, outline a plan to improve this situation.

Certainly the quota system must go, and Melissa might need improved training and technology to balance efficiency with the need to meet customers' needs. The company might also begin to conduct some customer surveys to understand needs and measure satisfaction as well as to measure Melissa's performance relative to these needs. The company needs to examine its staffing policies and scheduling procedures to ensure adequate coverage so that customers will not have to wait and clerks are not rushed.

Nightengale College of Nursing

In examining the scope of the first six categories (excluding results) in the 2009-10 Baldrige Education criteria (which you can access at the Baldrige Web site), list the most relevant factors that would affect NCON's management practices. For example, in considering the Process Management category, you might note that one of their strategic challenges is to grow enrollment while differentiating the college, and to maintain financial viability and integrate technology. Therefore, you might expect to see that a key process would be student recruitment and retention. You might also note that their core competencies are high-quality nursing instruction, effective use of instructional technology, and leading-edge distance education in nursing. Thus, you might expect to see some key work processes that relate to and capitalize on these core competencies. Therefore, in your listing of the most relevant factors for the Process

Management category, the first two factors might be the following:

- **Grow enrollment while differentiating college, maintain financial viability and integrate technology, increase capacity to meet workforce needs (e.g., aging nursing faculty), and increase enrollment of males and male/female minorities and retention and graduation of minority students**
- **Core competencies: High-quality nursing instruction, effective use of instructional technology, and leading-edge distance education in nursing**

Complete this list for each category and briefly justify why these factors would be important to the design of NCON's performance excellence approaches to achieving high quality and excellent business results.

Here are some suggestions, as characterized by the Baldrige case study evaluation team:

Leadership

College of Nursing on three campuses

Mission: Prepare nurses by fostering curiosity (engagement) . . . , serving the health care needs and issues . . . ,and promoting lifelong learning and healthy communities . . .

Vision: Be an exemplar of excellence among nursing schools through academic achievement, research and creativity, innovation, collaboration, and commitment to fiscal accountability

Values: Collaboration, compassion, quest for knowledge, competence, and integrity

Classroom Resource Exchange (CRE) designed to provide access to Golden Fleece to facilitate communication ; . . . and to provide an action plan tool to develop, deploy, and monitor goals

Dean, three associate deans, and assistant to the dean form the Dean's Council that provides day-to-day oversight; dean represents applicant on university-wide councils

Regulatory environment: Parent university policies and procedures (under THECB mandates); federal regulations for higher education institutions (OSHA, ADA, FERPA); standards and accreditation (SACS and CCNE); state board (TBN) approves nursing programs

Parent is governed by a Board of Regents (BR). . . meets quarterly to set/review budget and academic framework and provide oversight of financial

Parent structured in five divisions, each headed by a VP; VP of Academic Affairs is the Provost, and all college deans report to this position

Five key stakeholder groups (in addition to students): BR, feeder schools, employers and graduate schools, alumni/donors, and the community

Strategic Planning

Core competencies: High-quality nursing instruction, effective use of instructional technology, and leading-edge distance education in nursing

Mission: Prepare nurses by fostering curiosity (engagement) . . . , serving the health care needs and issues . . . ,and promoting lifelong learning and healthy communities . . .

Vision: Be an exemplar of excellence among nursing schools through academic achievement, research and creativity, innovation, collaboration, and commitment to fiscal accountability

Strategic challenges: Grow enrollment while differentiating college, maintain financial viability and integrate technology, increase capacity to meet workforce needs (e.g., aging nursing faculty), and increase enrollment of males and male/female minorities and retention and graduation of minority students

Strategic advantages: Reputation of its BSN programs, responsiveness to changing market, fiscal strength, use of technology in education delivery, and supportive alumni base

Dean, three associate deans, and assistant to the dean form the Dean's Council that provides day-to-day oversight; dean represents applicant on university-wide councils

Key faculty committees support key processes: Admissions, Curriculum, Faculty Development, Evaluation and Assessment

Five key stakeholder groups (in addition to students): BR, feeder schools, employers and graduate schools, alumni/donors, and the community

Largest nursing school in the state (graduates the largest number of nurses), numerous competitors, especially in large urban areas

LIGHT Scorecard of Key Performance Indicators (KPIs)

Customer Focus

Key student requirements: *All students*: Excellent instruction, flexible scheduling, placement, instructional support, advising, accessible faculty, and technology. *Transfer students*: Orientation, assessment of capabilities, and articulation of courses. *Distance students*: IT support; ability to ask questions and receive prompt answers. *Minority students*: Respect for diversity, sense of identity, and inclusion. *International students*: Assistance with visa status, orientation, sense of identity, and inclusion. *Graduate students*: Flexible scheduling

Key stakeholder requirements: *Board of Regents*: Communication about current and

future campus needs, meet state demand for nurses and nursing faculty, sound fiscal management, increased enrollments, and maintain accreditation. *Feeder schools:* Opportunities for input, regular communications about campus events, continuing education opportunities, knowledge of current and future admissions requirements, and articulation agreements. *Community:* Support for community projects; educational resources and expertise. *Employers and graduate schools:* High-quality, clinically competent pool of graduates; meet changing needs. *Alumni/donors:* Positive image and reputation; continued communication, including updates; employment opportunities; and support for lifelong learning

Student markets segmented as prospective and enrolled; enrolled students further segmented by participation (transfer, distance, minority, international, graduate)

Five key stakeholder groups (in addition to students): BR, feeder schools, employers and graduate schools, alumni and donors, and the community

Practicum sites are key partners—partners serve on an advisory council for the college

Three campuses, including primary (Freedom) and two satellites (San Antonio, Dallas)

Largest nursing school in the state (graduates the largest number of nurses); numerous competitors, especially in large urban areas

Increasing competition from “fast-track” and online programs

Measurement, Information, and Knowledge Management

Numerous comparative sources available for academic and operational metrics
Increasing competition from “fast-track” and online programs; increasing competition for qualified faculty members

LIGHT Scorecard of Key Performance Indicators (KPIs)

Focus on . . . improving performance, and effective strategic planning

Roundtable Review Process and Learn, Analyze, Design, Development, Implements and Evaluate (LADDIE) models to design and improve systems and processes

Three campuses, including primary (Freedom) and two satellites (San Antonio and Dallas); classes offered on campus, accelerated, and online

Core competencies are . . . effective use of instructional technology, and leading-edge edge distance education in nursing

118 faculty and staff members include 97 full-time and part-time faculty members, plus 60 adjunct and loaned hospital faculty members

Pilot site for parent university's new technologies; Golden Fleece is data warehouse for campus transactions, student records, financial data, and HR information; Classroom Resource Exchange (CRE) designed to provide access to Golden Fleece; Simulation and Clinical Learning Centers at San Antonio satellite

Strategic advantage: use of technology in education delivery

Workforce focus

Key characteristics of organizational culture: Commitment to excellence in teaching and preparing nurses to deliver high-quality patient care; creativity, knowledge, and skills of faculty, staff members, and students are greatest strengths

Core competencies: High-quality nursing instruction, effective use of instructional technology, and leading-edge distance education in nursing

Vision: Be an exemplar of excellence among nursing schools through . . . research and creativity, innovation, collaboration

118 faculty and staff members include 97 full-time and part-time faculty members, plus 60 adjunct and loaned hospital faculty members, all nonunion; all but two faculty members hold a doctorate; 96% are female; 79.7% are Caucasian, 11.3% are African American, 7% are Hispanic, 2% are Asian; the average age is 51

Strategic challenge: increase capacity to meet workforce needs (e.g., aging nursing faculty)

Multiple learning/listening posts to gather input from faculty, staff members, and students

Key characteristics of organizational culture: Commitment to excellence in teaching and preparing nurses to deliver high-quality patient care; creativity, knowledge, and skills of faculty, staff members, and students are greatest strengths

Three campuses, including primary (Freedom) and two satellites (San Antonio, Dallas); facilities housed in building on main university campus, built in 1920, renovated in 1977; shared facilities on satellite campuses with College of Health Sciences

Key student requirements: *All students*: Excellent instruction, flexible scheduling, placement, instructional support, advising, accessible faculty, and technology. *Transfer students*: Orientation, assessment of capabilities, and articulation of courses. *Distance students*: IT support; ability to ask questions and receive prompt answers. *Minority students*: Respect for diversity, sense of identity, and inclusion. *International students*: Assistance with visa status, orientation, sense of identity, and inclusion. *Graduate students*: Flexible scheduling

Process Management

Core competencies: High-quality nursing instruction, effective use of instructional technology, and leading-edge distance education in nursing

Parent is governed by a Board of Regents (BR) . . . meets quarterly to set/review budget and academic framework and provide oversight of financial, physical, and personnel affairs.

Parent structured in five divisions, each headed by a VP; VP of Academic Affairs is the Provost, and all College Deans report to this position

Key partners internal to university: Admissions, Development, Information Technology, Undergraduate Studies, Library, Student Life

Strategic challenges: Grow enrollment while differentiating college, maintain financial viability and integrate technology, increase capacity to meet workforce needs (e.g., aging nursing faculty), and increase enrollment of males and male/female minorities and retention and graduation of minority students

Baldrige process provides focus on continual organizational refinement of processes; Roundtable Review Process and Learn, Analysis, Design, Development, Implement, Evaluate (LADDIE) models to design and improve systems and processes

TecSmart Electronics

1. Discuss how the practices that TecSmart identified support Deming's 14 Points.

It is easy to relate these to Deming's 14 Points:

1. *Create a Statement of Purpose.* Leaders set company objectives which are cascaded down the organization.
2. *Learn the New Philosophy.* Executives are involved in teaching key courses related to improvement.
3. *Understand Inspection.* Inspection is not explicitly addresses, but employees are trained in problem solving, which suggests a more proactive approach to improvement rather than reliance on after-the-fact inspection.
4. *End Price Tag Decisions.* Suppliers are involved in early stages of a product development program, suggesting a close working relationship where cost is not king.
5. *Improve Constantly.* A process is in place to train employees in a 5-step problem solving process, and new processes are documented and variation in ongoing processes is monitored for corrective action.
6. *Institute Training.* TecSmart University, customer relationship training, and

- training for sales, engineers, office staff, and managers all support this Point.
7. *Teach and Institute Leadership.* Leadership is evident in objective-setting, communication and teaching, planning, complaint resolution, and middle management coaching.
 8. *Drive Out Fear and Innovate.* Routine communication sessions with top management, employee empowerment through self-managed teams, and the annual employee surveys would tend to support this Point.
 9. *Optimize the Efforts of Teams and Staff.* Teams and staff have been organized and are prevalent throughout.
 10. *Eliminate Exhortations.* Specific goals and measurement processes are used extensively.
 11. *Eliminate Quotas and MBO; Institute Improvement; and Understand Processes.* Not explicitly mentioned, but all evidence seems to support this.
 12. *Remove Barriers.* Hourly workers can make process changes with the agreement of only one person, and sales people are authorized to travel wherever they feel it necessary for customer service.
 13. *Encourage Education.* Education appears to be a core process in this company.
 14. *Take Action.* All the points mentioned clearly show this.

2. How do these practices support the Baldrige criteria? Specifically, identify which of the questions in the criteria each of these practices address.

TecSmart Electronics' strengths can also be classified as follows.

1. *Leadership.* Bullets 1, 2, 3, and 7.
2. *Strategic Planning.* Bullets 1 and 7.
3. *Customer and Market Focus.* Bullets 8, 9, 10, 11, 15, and 17.
4. *Measurement, Analysis, and Knowledge Management.* Bullets 4, 5, 7, 8, 11, 16, and 17.
5. *Human Resource Focus.* Bullets 1, 6, 9, 12, and 14.
6. *Process Management.* Bullets 4, 8, 16, and 18.
7. *Business Results.* Bullets 2, 3, 4, 7 and 17.

3. What are some of the obvious opportunities for improvement relative to the Baldrige criteria? What actions would you recommend that Tec-Smart do to improve its pursuit of performance excellence using the Baldrige criteria?

One way to approach this is to compare the strengths to the criteria questions and identify key gaps in what they do. For example, in strategic planning, no mention is made of how goals are set, benchmarks are chosen, or cycles of improvement in the planning process take place. Also, other than managers who are involved in professional and community organizations, no mention is made of how the company addresses social responsibility obligations.

Can Six Sigma Work in Health Care?

1. What would be your agenda for this meeting?

Chapter 11 addresses Six Sigma implementation and provides some guidelines for getting started. Students should come up with many of these concepts as the basis for an agenda. However, probably the first thing needed would be to address the questions in #2 below to get a basic understanding of the organization before dealing with awareness, training, coaching, and other change management issues.

2. What questions would you need answered before proposing a Six Sigma implementation plan?

The questions might include:

- Why do this? Understand the mission, vision, and values of SLRMC
- Willingness to commit time and money to a Six Sigma process?
- Where do they stand now? Do they have metrics and benchmarks for comparison?
- What “champions” might they identify within the physician and staff communities?
- Why the project areas identified? Are these the “low-hanging fruit” to help motivate the process?

3. How would you design an infrastructure to support Six Sigma at SLRMC?

You might design an infrastructure around the key characteristics of Six Sigma as outlined in the chapter, and develop project goals and activities to address each one:

1. Thinking in terms of key business processes and customer requirements with a clear focus on overall strategic objectives.
2. Focusing on corporate sponsors responsible for championing projects, supporting team activities, helping to overcome resistance to change, and obtaining resources.
3. Emphasizing such quantifiable measures as defects per million opportunities (dpmo) that can be applied to all parts of an organization: patient services, quality assessment, financial management, human resources, and so on.
4. Ensuring that appropriate metrics are identified early in the process and that they focus on health care results, thereby providing incentives and accountability.
5. Providing extensive training followed by project team deployment to improve profitability, reduce non-value-added activities, and achieve cycle time reduction.
6. Creating highly qualified process improvement experts (“green belts,” “black belts,” and “master black belts”) who can apply improvement tools and lead teams.
7. Setting stretch objectives for improvement.

Santa Cruz Guitar Company Revisited

Read the Santa Cruz Guitar Company Case in Chapter 1. Explain how Deming's 14 Points are reflected in its management practices and procedures.

1. *Create a Statement of Purpose.* Passion for guitar making.
2. *Learn the New Philosophy.*
3. *Understand Inspection.* Inspection used judiciously to ensure quality, not indiscriminately.
4. *End Price Tag Decisions.* Selecting highest grades of wood. Using hand processes when needed to ensure quality.
5. *Improve Constantly.* Use written records to try to duplicate outstanding sound results.
6. *Institute Training.* Encourage skill building through external courses or building instruments for personal use.
7. *Teach and Institute Leadership.* Encouraging workers to go out on their own.
8. *Drive Out Fear and Innovate.*
9. *Optimize the Efforts of Teams and Staff.* Not having a formal quality department. Recruiting workers who thrive in a team environment.
10. *Eliminate Exhortations.*
11. *Eliminate Quotas and MBO; Institute Improvement; and Understand Processes.* Not passing work on to the next department until quality is assured.
12. *Remove Barriers.* Skill building helps workers become familiar with the entire process.
13. *Encourage Education.*
14. *Take Action.*

While all points are not explicitly observed, many are clearly there.

