

Solution Manual for Project Management A Managerial Approach 9th Edition Meredith Mantel Shafer 1118947029 9781118947029

Full link download:

Solution Manual:

<https://testbankpack.com/p/solution-manual-for-project-management-a-managerial-approach-9th-edition-meredith-mantel-shafer-1118947029-9781118947029/>

Test Bank:

<https://testbankpack.com/p/test-bank-for-project-management-a-managerial-approach-9th-edition-meredith-mantel-shafer-1118947029-9781118947029/>

Chapter 1: Projects in Contemporary Organizations

CHAPTER OVERVIEW

Overview – This section provides a short overview of the modern history of project management. Many of the now accepted practices of project management were actually first developed by the U.S. Government to further the development of complex weapons systems and space hardware.

1.1 The Definition of a “Project” – This section describes the common characteristics of a project used to distinguish projects from other types of work. Three Project Objectives: The Triple Constraint – Scope, time, and cost are three of the most important knowledge areas in project management. Each of these must be managed concurrently due to the effect that each one has on the other.

- ✓ Characteristics of Projects
 - Unique
 - One-time occurrence
 - Finite duration
- ✓ Interdependencies – Project activities interact with each other and with other projects, groups, and activities within the organization.
- ✓ Nonprojects and Quasi Projects – Routine tasks are not considered projects because they are performed over and over again. Projects on the other hand, are one-time events. Quasi-projects are those that do not have a specific task identified, no specific budget, and no specific deadline defined. Although there are some uncertainties, project management skills can still be used to manage them.

1.2 Why Project Management? – While project management has limitations, most organizations receive real benefits from its use. Benefits include better control, better

customer relations, increase in projects' return on investment, etc. Project management is not easy; for the participants (to paraphrase Churchill) it may seem to be the worst form of management except all the others that have been tried. In spite of that, project management is a growing career path that is highly rewarding.

- ✓ Forces Fostering Project Management – These include expansion of knowledge across academic disciplines which can be used in problem solving, satisfying the demand for increasingly complex products and services, and an ever-expanding worldwide market forces us to consider cultural and environmental issues in the production and distribution of products and services.
- ✓ Recent Changes in Managing Organizations – These include an accelerating replacement of traditional hierarchical management by consensual management, the adoption of the “systems approach” to dealing with problems, and organizations increasingly establishing projects as the preferred way to accomplish their goals.
- ✓ The Project Manager & Project Management Organizations – The complexities of project management coupled with the increased recognition of the necessity for projects has led to an astronomical growth in the professional society devoted to project management, the Project Management Institute (PMI). PMI, through its efforts to define and standardize the body of knowledge, has made a significant contribution in establishing project management as a true professional)
- ✓ Trends in Project Management – Increased competition and consistent developments in technology are pushing the boundaries of project management into new spheres. As the field of project management matures, a variety of trends are identified and discussed.

1.3 The Project Life Cycle – This section describes the typical life cycle of most projects. Commonly projects have a slow start, a busy middle and a slow end. When this pattern is graphed as percent complete versus time, it results in the classic S-shaped life cycle curve depicted in Figure 1-3. Some projects follow a different pattern, particularly if they involve integration and testing of disparate parts at the end.

- ✓ Risk During the Life Cycle – Risk or uncertainty changes throughout the life cycle of a project. At the start, there is the largest amount of uncertainty about the outcomes at the end. As time passes, the end point can be predicted with more and more accuracy.

1.4 The Structure of This Text – This book is arranged to follow the life cycle of a project, beginning with project initiation, which includes topics on startup, organization and proposals. The second part covers project implementation including planning, scheduling, budgeting and controlling projects. The final part discusses project termination. Throughout the text, the importance of managing both people and risks are emphasized.

TEACHING TIPS

Most students intuitively know more about project management than they realize. Through experiences at work, school or in the community, almost every adult has participated in or even managed a project at one time or another. For these students, the instructors will be able to foster many “aha” moments when the student will recognize the situation and be able to apply the concepts just learned. One way to facilitate discussions that accelerate this process is to apply pair-wise brainstorming. In conventional brainstorming or class discussions, many students will choose not to participate, unless the instructor takes the time consuming route of going individually around the room. In pair-wise brainstorming, the instructor divides the class up into two or three person teams to discuss the question or issue at hand. The advantage of this technique is that it creates an environment where all students feel comfortable participating in the discussion. After sufficient time has passed, the instructor “regroups” the class to collect the thoughts generated by the teams. These can be written on a whiteboard or easel for further discussion.

For this introductory chapter, an excellent topic to apply this technique to is the question of how a project is different from other work. With some assistance from the instructor, the students will collectively come up with the same list as in the text. They will generally overlook conflict, though they will readily recognize its applicability.

The instructor needs to circulate among the groups during this time to listen to what the students are talking about. The object is not to take over their discussion, but rather to offer encouragement and guidance if needed. This will also help keep the discussions from drifting onto baseball or some other interesting but not relevant subject. Eventually many of the groups will fall silent (or get onto baseball) signaling the time to move on to the whole class discussion. The groups usually need about 20 minutes and the following class discussion can be done in about 30 minutes.

PROJECT MANAGEMENT IN PRACTICE

The Smart-Grid Revolution Starts in Boulder, Colorado

Question 1: Are the triple constraints of this project clear? List each of them.

The triple constraints are all clear

Scope: “smart-grid” electrical system that would span the entire city

Time: 3 years

Cost: \$100 million

Question 2: Given the range of benefits listed for the new technology, what interdependencies and conflicts do you suspect smart grids will create for utilities?

Interdependencies: all of the system to work correctly; customer technology abilities and system use

Conflicts: users and the system; employees fearful of getting replaced

Question 3: A major portion of this project had to do with carefully managing all the stakeholders. List those mentioned in the article and divide them into the four groups mentioned above. Do any stakeholders fall into more than one of the groups?

The stakeholders and their groupings are below. Some of these stakeholders fall into multiple categories.

Clients	Parent organization	Project team	Public
Xcel	leading technologists	Accenture consulting for engineering	business leaders
customers	business leaders	energy industry consultants	IT experts
	IT experts	leading technologists	Boulder city managers
	senior project manager	IT experts	Boulder city leaders
	Project Management Office	senior project manager	user-citizens
		Project Management Office	

Many of these will fall into more than one group.

Question 4: What conflicts do you suspect might have occurred between all the different stakeholders in this project?

Conflicts that could have arisen are numerous and could have included:

- ✓ Business leaders and city managers related to costs versus features
- ✓ Engineers versus city leaders related to costs
- ✓ Citizens versus city leaders related to costs

Question 5: Why do you imagine Xcel agreed to invest \$100 million in this risky experiment? What might their ancillary goals have been?

Any new project idea is a risky experiment. Xcel Energy believes that if everything is planned properly and the scope and results of the project are clearly documented, then with careful execution it is possible to employ a new technology that helps the company to manage its resource pool effectively and efficiently. An ancillary goal could have been to learn from this project and apply it to other municipalities.

The Olympic Torch Relay Project

Question 1: Which of the three universal and three common characteristics of projects are displayed in the regular torch relay?

The three universal characteristics are unique, one-time, and finite duration. Each of these are displayed in the torch relay.

The three common characteristics are interdependencies, resources, and conflict. Of these, the interdependencies and resource characteristics are the main ones displayed.

Question 2: Since this is such a regular project—every four years since 1936—would you consider it a nonproject, or a quasi-project? Why, or why not?

I would consider this a project because each torch relay is unique in that they all travel different routes and are managed by different organizations.

Question 3: Is the torch relay another part of the Olympics themselves, perhaps a sub-project?

The torch relay is a project by itself based on its length and complexity. You could consider it a project that is part of the overall Olympic "program."

Question 4: How widespread do you think this technology will become? What uses will be garnered from it? Do any of them concern you?

Answers will vary by student.

Turning London's Waste Dump into the 2012 Olympics Stadium

Question 1: Which of the “triple constraints” seems to be uppermost here? Which constraints were Crockford trading between?

Time is the constraint that seems to be the uppermost here, given the deadline of the project and the required amount of work to be done before the project could take-off. Crockford was trading between scope and time, since the team involved people from different positions and this could have led to scope creep, thereby increasing the time required.

Question 2: What shape of life cycle did this stadium project have? Compare it with the life cycle of the river dredging portion of the effort. With the Olympic Torch Relay project described earlier.

The life cycle of this project is S-shaped. As the project is initiated and better understood, it would gain momentum giving the project a S-shape. An example would be the time when the team realized that a lighter roof was required. As the understanding of the project increases so does the momentum.

Even river dredging as a project was S-shaped due to obvious reasons as was the torch relay.

Question 3: Were there any ancillary goals for this project? What might they have been?

The ancillary goals of this project could be the learning of skills needed in the integration of a tightly scheduled project and the coordination and control of the various resources in the project.

Also, the impact of using a waste dumpsite as a Olympics stadium is in itself one of those properties that commands respect towards a nation's engineers and their combined vision.

MATERIAL REVIEW QUESTIONS

Question 1: Name and briefly describe the societal forces that have contributed to the need for project management.

Refer to the section titled “*Forces Fostering Project Management*” in the text.

- 1) Modern societies have experienced an exponential expansion of human knowledge. As a result, an increasing number of academic disciplines can be used in solving problems associated with the development, production, and distribution of goods and services.
- 2) Satisfying the continuing demand for more complex and customized products and services depends on the producers' ability to make product design an integrated and inherent part of their production and distribution systems.
- 3) Worldwide markets force producers to include cultural and environmental differences in their managerial decisions about what, where, when, and how to produce and distribute output.

Question 2: Describe the life cycle of a project in terms of (1) the degree of project completion; (2) required effort.

Refer to Figure 1-3, Figure 1-4, and Figure 1-5: *The Project Lifecycle* and to Section 1.3 in the text. A lifecycle is used to describe a period of time between a starting point and a terminating point. As the project nears termination, the percentage of project completion should rise. For most projects, the required effort and the project completion level are strongly correlated. While problems may detract from efficiency, it's usually true that as more work is done, the completion level rises as well. There are limitations, particularly in intellectual projects (e.g. software development) where too many cooks can spoil the broth and hurt the project more than help it.

The typical life cycle is then characterized by a slow beginning, when the project is organized, a busy middle when most of the work is done, and a tapering off to completion as tasks are wrapped up and finishing touches are added.

Question 3: Describe the limitations of project management.

Refer to Section 1.2 in the text. Project management is an approach taken to initiate, plan, execute, control, and terminate projects with the intent of achieving the objectives used to justify the project's approval. There are some important limitations associated with project management. They include:

- 1) The project characteristic of uniqueness tends to be associated with uncertainty. Uncertainty can affect a project for better or for worse. For example, it can be difficult to forecast important items related to budget, schedule, customer satisfaction, and business impact.
- 2) Projects often use a temporary organizational structure that is different from the way most organizations typically perform work. This can lead to conflicting priorities between the project and daily operations, especially when management has not clearly established formal authority over the resources responsible to multitask on one or more projects and on one or more routine jobs.
- 3) Conflict is inherent in projects. Since the project manager usually has limited power and authority, the options for modifying the behavior of others are often limited in relation to the accountabilities carried by a project manager.

Question 4: List the six main characteristics of a project and briefly describe the important features of each.

Refer to Section 1.1 in the text. The main characteristics of a project are:

- 1) *Uniqueness*: Project management is always the tool of choice when a "never done this before" goal is taken on. The space program is overflowing with examples from Project Mercury to the Mars Rovers. Project management is an inappropriate tool for routine tasks such as cutting payroll
- 2) *One-time occurrence*: Projects have a defined scope that includes a specific set of desired end results.
- 3) *Finite duration*: Projects are temporary endeavors. The performing organization should complete the project's work between the project's start date and the

- project's termination date. In many projects, the termination of the project may involve a transition process that releases the project's solution to steady-state business operations.
- 4) *Interdependencies*: Projects interact with routine operations of the performing organization as well as with other projects. Perhaps of most interest to project planners (and the makers of project management software) is that project tasks often depend on each other as when the paint has to dry before the carpet is laid.
 - 5) *Resources*: Projects have constrained resources, particularly people, which require careful management.
 - 6) *Conflict*: Conflict is a common theme in project management. Many of these arise from the conflict between the limited resources (time, money, and people) available to the project team and the seemingly unlimited requirements from the customer.

Question 5: Name and briefly describe the three primary goals of a project. Refer to Figure 1-1: *Scope, cost, time project targets* and to the section titled "*Three Project Objectives: The Triple Constraint*" in the text. A goal is a desired future state of reality that is specific, measurable, and time-bound. By converting a goal into a gap, it becomes possible to determine the level of change in the status quo that will be required to achieve the desired future state. According to Figure 1-1, the three primary goals of a project are:

- 1) *Scope*: In Project Management, the term scope means specified deliverables. The PMBOK® Guide defines scope as: "The sum of the products, services, and results to be provided as a project." The scope of the project is defined at the beginning during the planning phase and the state of the project is continually verified against the scope definition.
- 2) *Time*: Well-defined projects always have a deadline, whether it is tied to a significant event (e.g. the World Series) or the whim of senior management. Regardless of the source, completing the project within the deadline is always a significant performance objective.
- 3) *Cost*: Costs represent resources expended to obtain a set of benefits. Projects typically are limited in the costs they can incur to try to ensure that the benefits exceed the costs.

Question 6: Discuss the advantages and disadvantages of project management.

Refer to Section 1.2 in the text

An advantage is favorable toward accomplishing a desired purpose and a disadvantage is unfavorable toward accomplishing a desired purpose. Project management is a tool for organizing resources to accomplish a goal in a cost effective manner. As with any tool, it works better in some situations than in others.

- 1) It provides useful tools (scope statement, WBS, budget, schedule, earned value analysis, etc.) that can improve an organization's ability to plan, execute, and control the performance of activities and the utilization of resources when doing nonroutine work.

- 2) The use of interdisciplinary teams to make decisions and solve problems generally improves the quality of the result.
- 3) Many practitioners of project management have reported that the use of project management has resulted in shorter development times, reduced costs, better quality, and higher profit margins.
- 4) The focus on managing a project can provide an end-to-end view of the effort required to provide an effective solution capable of solving real needs of the customer. This focus can facilitate effective conflict management by giving stakeholders access to appropriate tools and techniques for balancing competing demands for performance, time, and costs.

According to the text, some disadvantages of project management are:

- 1) A high level of energy and commitment is often required of the project manager and the project team in order to communicate about and coordinate the execution of the project's solution. In many cases, project participants will lack experience and training in effective tools and techniques for project integration and control.
- 2) The level of organizational complexity may increase as members of the performing organization seek to balance the competing demands of routine work with the nonroutine work of a project.
- 3) There is an increased probability that project teams will violate organizational policies, unless the project manager acts appropriately.
- 4) If an organization attempts to use the tools and techniques of project management to manage the wrong type of work, the organization will probably experience increased managerial difficulties, higher costs, and lower utilization of resources.

Question 7: How do projects, programs, tasks, and work packages differ?

Refer to the glossary and to Section 1.1 in the text. In spite of the best efforts of PMI to impose some consistency, the vocabulary of project management is not used consistently across different industries or even within them. Students will no doubt jump into this discussion with enthusiasm to explain how in their experience they have heard these terms used. It is important to emphasize, however, the definitions from the PMBOK® Guide Fifth Edition, particularly if the students are planning on becoming certified Project Management Professionals (PMP®).

- 1) *Program*: A program is a large-scale endeavor composed of several projects all with a common overall goal. The Apollo program is a good example. The overall goal of putting a man on the moon and returning him safely to Earth involved many projects. Designing and constructing the various modules, developing the Saturn rocket, even designing and building the facilities at the Kennedy Space Center were each significant projects by themselves.
- 2) *Project*: A project is a subdivision of a program. The project is a temporary endeavor that will provide useful solutions to real needs. The focus of a project will be on producing deliverables that customers or users can formally accept during the termination processes of project management.

- 3) *Tasks*: In the PMBOK® Guide Fifth Edition, a task is defined as a unit of work within a project. Various practitioners and various pieces of software use task differently, and apparently PMI has given up the ghost on consistency for this term.
- 4) *Work Package*: According to the PMBOK® Guide Fifth Edition, the work packages generally reflect the lowest level of detail in the work breakdown structure used to track and control budget and schedule variances on a project.

Question 8: How would you define a project?

Refer to Section 1.1 in the text. The PMBOK® Guide Fifth Edition defines a project as “A temporary endeavor undertaken to create a unique product, service or result.”

Question 9: What are some of the interdependencies related to a project?

Refer to Section 1.1 in the text.

- 1) Projects often depend upon functional departments to provide resources and the functional departments depend upon projects to use resources effectively and efficiently, so that the project manager can release those resources back to the function as quickly as possible. This type of interdependency is often associated with conflicts regarding work priorities, job assignments, and work schedules.
- 2) Projects often depend upon other projects to release resources or to create deliverables that are inputs to a separate project. This type of interdependency may lead to resource contention and resource loading problems. It may also create potential compatibility problems, when the performing organization ultimately assembles the individual project outputs into an integrated system.
- 3) Within projects, there are typically many interdependencies among the tasks. These may be actual physical relationships; for instance the roof can't go on until the foundation is poured. They may be information dependencies; for example, John has to finish his drawing before I can start mine. They may also be a by-product of the resource interdependencies where John can't start work on task B of this project until he completes task 563 of another project which by chance or design has a higher priority.

Question 10: What are some sources of conflict the project manager must deal with?

Refer to Section 1.1 in the text:

Unfortunately, there are many sources of conflict in a typical project. Among them are:

- 1) The project customers, who often push their own interests in conflict with the actual or perceived project requirements.
- 2) The inherent conflicts in trying to manage costs, schedules, and objectives at the same time. Typically, something has to give, and the project manager is put in a difficult position of being the messenger of the bad news. In other words, there is a need for goal-focused balancing within a constrained system and the project is subject to expectations generated from the perceptions of stakeholders

- 3) The project's own organization, which may have problems staffing all the projects mandated by senior management. Even when resources are adequate, the temporary nature of many project assignments is a source of conflict for the employee caught between the project manager and his or her functional manager.

Question 11: Differentiate between direct and ancillary project goals. Would learning a new skill through the project be a direct or ancillary goal? Entering a new market?

Refer to Section 1.1 in the text:

Direct project goals are the goods and services produced by the project for the customer. Ancillary goals are those that benefit the organization performing the project and are usually a by-product of the project. The ancillary goals are usually things that the sponsor or senior management wants and expects as a part of project success. An example might be a project with the direct goal of creating a new piece of software and an ancillary goal of training ten people in a new programming technique.

Learning a new skill through a project sounds like an ancillary goal, while entering a new market is harder to place. If the project was set up to specifically enter a new market then it's a direct goal. If entering the new market is a by-product of creating a new product or service then it's an ancillary goal.

Question 12: Describe the characteristics of quasi-projects.

Refer to Section 1.1 in the text:

Descriptive characteristics of quasi-projects include:

- ✓ No specific task is identified
- ✓ No specific budget is given
- ✓ No specific deadline is provided

CLASS DISCUSSION QUESTIONS

Question 13: Give several examples of projects found in our society, avoiding those already discussed in the chapter.

There are innumerable examples that the students may cite:

- 1) The cleanup of the World Trade Center site after 9/11. This project grew from the chaos of the immediate rescue efforts to a well-run process that succeeded in erasing the physical evidence of the attack. An excellent (and controversial) book on this project is [American Ground: Unbuilding the World Trade Center](#) by William Langewiesche.
- 2) The Columbia Accident Investigation. This is the third excellent report produced by NASA on problems within their project management environment. The complete report is at the website <http://caib.nasa.gov/>.
- 3) The Mars Rovers. This was a resounding success for NASA, and the plucky rovers have become the world's most beloved robots since R2D2 and C3PO. The website describing the project is at <http://marsrovers.jpl.nasa.gov/home/>.

Question 14: Describe some situations in which project management would probably not be effective.

The purpose of a project is to change the existing status quo by providing discrete solutions that solve real needs. Project management will not be effective if:

- 1) A real need does not exist or the organization has not clearly defined the need that the project should solve. In order to be effective, project managers should understand what would be required to complete the project successfully.
- 2) The proposed goal for the project is something that is routinely created by an in-control process. An example would be a "project" to print next month's payroll checks using the existing process. A project would be to install new payroll software in time for next month's payroll. Once it's accomplished, the project is over and it's back to the routine process.
- 3) The solution is not discrete. For example, "world hunger" does label a real need, but the solution to that need is hardly a discrete solution appropriate to project management. However, providing disaster relief to a famine stricken area of the world within a finite period of time or achieving a stated level of performance for famine relief might benefit from project management approaches.

Question 15: How does the rate-of-project-progress chart (Fig. 1-3) help a manager make decisions?

Refer to Figure 1-3 and to Section 1.3 in the text. In a project planned with the techniques of Earned Value the rate-of-project-progress chart is a by-product of the project plan. It shows the planned rate at which resources (usually labor but it can be dollars) will be consumed. Once this curve and its cousins are established, they give insights into the number of people who will be required and when they will be needed. The simplifying assumption is that all labor is equally valuable to the project and that each hour "earned" is just as important as any other. When the project is underway, actual labor expended and actual progress earned can be plotted against the plan. This gives a reliable indication of how the project is doing in terms of cost and schedule.

Question 16: Expound on the adage, "Projects proceed smoothly until 90 percent complete, and then remain at 90 percent forever."

Refer to Figure 1-3 and to Section 1.3 in the text. Lifecycles tend to resist termination. In many cases, the work needed to closeout a project can be tedious and unrewarding particularly those picky issues that have been allowed to let slide. Moreover, as people begin leaving the projects, the remaining team members may become more interested in landing the next assignment than in completing the last steps of the current project. An equally damaging possibility is that the remaining people don't know what their next job is so they drag out this one.

Question 17: Would you like to be a project manager? Why, or why not?

Student answers will vary considerably, but some responses may be to:

- 1) turn around the poor project success rates.

- 2) lead others in successful projects.
- 3) learn more about the IT and business aspects of the firm.
- 4) gain experience which will facilitate a “move up the career ladder.” Further, my experience in teaching project management to hundreds of technical professionals in the San Diego area is that they are usually in the class for one of three reasons:
 - 1) They are seeking new opportunities. I have heard many students say something like, “I don't want to be sitting at the same lab bench for the next twenty years.”
 - 2) They have been thrust into a project manager's role by their management and figure they should learn something about it.
 - 3) They have been a project manager, sometimes for years, and want to find out “how to do it right.”

Question 18: Discuss why there are trade-offs among the three prime objectives of project management.

There are tradeoffs because as one or two of these change, so do the remaining ones. For example, if the schedule is extended because the employees are taking too long to complete the work, then the cost will increase as well.

The rule of thumb heard for years among project managers is that when it comes to cost, schedule and performance, you can control any two. That is you can bring a project in on cost and schedule if you have some flexibility with the performance or you can achieve performance and cost if there is some flexibility with the schedule. Another way to state this rule is among cost, schedule and performance, only two can be independent (specified) and one has to be dependent. This is true because the real function that relates them is not known up front when the project is estimated and the “arbitrary” deadline is assigned.

Question 19: Why is the life cycle curve often “S” shaped?

The life cycle curve is a by-product of the project plan. It shows on a cumulative basis the rate at which labor will be expended per the plan. This is under the common Earned Value assumption that the amount of labor expended and the progress achieved are correlated. Most projects follow the slow, fast, slow pattern of activity. They are slow at the beginning as things are organized, fastest during the middle portion when many activities are working in parallel, and then slowing down again as deliverables are completed and last minute issues are resolved. If this type of plan is plotted on a cumulative basis such as Figure 1-3 the resulting curve will be S-shaped. It can be viewed as unwinding the bell-curve of a histogram into the string that shows inflection points separating increasing and decreasing rates of change.

Question 20: How might project management be used when doing a major schoolwork assignment?

It depends on what characteristics are embedded in the idea of “major.” It goes without saying that a student has limited resources and is working to a deadline, so these characteristics are a given. If major also means unique (at least to the student) and

complicated because there are many tasks with interdependencies, then project management could be very useful. If major just means big, for example, 30 problems out of the back of the book this week instead of 20, but the nature of the assignment is otherwise routine, then project management wouldn't be useful.

Question 21: Why is there such a pronounced bend in the curve of Figure 1-2?

Refer to Figure 1-2 in the text. The growth in the number of project managers has been created by a corresponding rise in the number of projects being implemented in modern organizations. The factors that have driven this growth include automation of many office functions, and management initiatives like Total Quality Management (TQM). This has resulted in an increased need for: (1) project managers (2) awareness of the profession of project management.

Question 22: Describe a project whose life cycle would be a straight line from start to finish. Describe a project with an inverse-S life cycle.

An example might be going through the training process to get a pilot's certificate. If the student follows a prescribed syllabus, there is very little planning required. If the student's schedule allows, he or she will spend about the same number of hours per week studying and flying from the beginning until they take their check ride.

A research astronomy project that requires the creation of a new equipment setup, would be an example of a project with an inverse S-shape. There would be lots of activity at the beginning to set up the experiment, then a long, relatively quiet time while data is gathered (perhaps by automated equipment), then most of the benefit accrues at the end when the data is analyzed and interpreted.

INCIDENTS FOR DISCUSSION

Blanka Transport Inc.

Questions: Is this a proper approach to the problem? What, if any, helpful suggestions would you make to Joe?

This incident is a good opportunity to discuss the haphazard ways that many projects start. Encourage the students to discuss projects in which they have participated that started because a senior manager made a casual comment during a meeting or at the coffee pot. What happened with these projects? Were they successful? Were there problems because not enough time was spent on understanding the real problem? Here are some thoughts to cover with the class:

- 1) The project needs to address the long-term problem of the imbalances, not just a one-year fix. It would be dangerous, therefore, to jump into a "fix" simply based on Joe's observations and ideas. The first phase would be to collect data on the problem and analyze the trends. The next phase would be to develop a set of potential solutions to the point where cost benefit analysis could be performed. Once the best solutions are chosen, a project could be organized to implement them.

- 2) Joe's son has the right idea to involve members of the management team and staff to generate buy-in and take advantage of their unique knowledge. One or the other of the managers, however, must be appointed the project manager to insure that there is a single source of clear direction for the team members. Joe can't end up brokering disputes between two project managers, as this would effectively make him the PM. Joe should be the project sponsor and as such should be willing to let the project play out without imposing his own preconceived notions of the best solution. He should be clear up front though if there is any particular option that he would find unacceptable so that the team does not waste any time on it. Joe's son could participate as a project planner, but again needs to insure that the participants do not defer to him because of his position.

Maladroit Cosmetics Company

Questions: Would you classify the work of installing the six machines as a project? Why or why not? Explain how the project manager might trade off one of the primary objectives for another. What type of life cycle would you envision the machine installation work would follow? Why?

Yes, this is a project because it meets the characteristics of projects described in Section 1.1 of the text.

Examples of how one objective can be traded for another may vary. One suggestion might be to lower the cost by only installing three machines now.

Answers can vary widely regarding the life cycle.