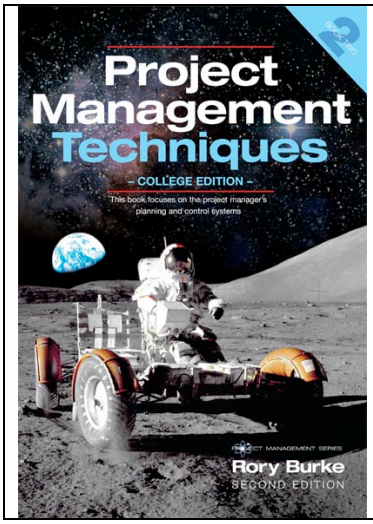
PMT2ed (college edition) **Instructor's Chapter Guide**



Project Management Techniques 2ed
(College Edition)

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Author's Note

The purpose of this instructor's chapter guide is to accompany my book*: Project Management Techniques 2ed* (college edition) and offer the lecturers a suggested presentation sequence, additional exercises and PowerPoint slides.

This book is used on a wide range of management and educational courses - project management techniques can be used in all sectors of industry and commerce, sports, social and even in our domestic life. In a book of basic techniques it is not possible to have an example for every type of project - the most important consideration is to understand the techniques and apply them to the projects.

Some of the business schools that use this book have structured their courses around the chapters. The chapters are in three parts:

1. The first part of the book focuses on the structures of project management that underpin the project management approach – these include the project lifecycle, the project management process, the project methodology and the project plan. Each of these topics is developed and explained to give project managers a solid platform from which to manage their projects.

2. The second part of the book discusses the content of all the phases of the project lifecycle, and shows how the strategy phases, the project phases and the operational phases are interlinked by a common thread to develop, implement and operate corporate strategy.

3. The third part of the book outlines the content of the ten knowledge areas and explains how to use the processes and techniques, and is supported with plenty of worked examples and exercises.

The book is also used by managers learning to use the planning software and studying for their project management accreditation (PMP) who want to see the techniques mentioned in the body of knowledge, developed and explained.

As managers are promoted to project manage larger and more complex project, so the project manager must be able to develop a fully integrated information and control system to plan, instruct, monitor and control large amounts of data quickly and accurately to facilitate the problem solving and decision-making process.

I would appreciate your feedback on the structure and content of the book and the Instructor's Manual, so that I can incorporate your suggestions in the next edition.

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PMT2ed (college edition), **Ch1. Introduction to Project Management Techniques** (page 16)

The purpose of the **Introduction to Project Management** chapter is to set the scene for the course and introduce some basic project management definitions: what is a project and what is project management? This chapter also introduces the body of knowledge and the roles of the key players: the project sponsor, the project manager and the project steering board. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of project management techniques.

Topic 1: Use Table 1.1: **Attributes of a Project** (page 18) and table 1.2: **Types of Projects** (page 20) to outline the features of a project with examples of different types of projects. This can be supported with local examples.

Topic 2: Use Table 1.3: **Characteristics of Project Management** (page 24) to outline the special features of project management and compare them with other types of management. Introduce the knowledge areas of the body of knowledge, together with the local project management associations and institutes.

Topic 3: Use Table 1.6: **Role of the Project Sponsor** (page 28) to show some of the key differences between the project sponsor and the project manager. This will help to distinguish their roles and show that both are important.

Topic 4: Use Table 1.8: **Role of the Project Steering Board** (page 32) to show that the project steering board are an important group of eminent professionals that can help the project manager achieve the project objectives.

Topic 5: Use section 8, **Project Success** (page 34) to discuss how to determine success and show that it depends from whose perspective success is being considered.

Exercise 1: What is a project and, just importantly, what is not a project? Use the Internet to research a large company in your country and subdivide its work into projects and business-as-usual.

Exercise 2: Consider a car production line or another type of production line, and identify where project management techniques could be applied.

Exercise 3: Use the Internet to find the local chapter of a project management association or institute in your area. Then find out what you need to do to obtain your PMP.

Exercise 4: Consider a project you are familiar with and discuss the different roles of the project sponsor, the project manager and the project steering board.

Exercise 4: Project success can depend on from whose perspective it is being considered. Identify four projects which were:

a) Project sponsor success and project manager success
b) Project sponsor success but a project manager failure
c) Project sponsor failure but a project manager success
d) Project sponsor failure and a project manager failure.

PMT2ed (college edition), **Ch2. Project Lifecycle** (page 36)

The purpose of the **Project Lifecycle** chapter is to introduce the project lifecycle, which is becoming an increasingly popular method of subdividing a project into a number of sequential phases. The four phase project lifecycle model will be developed together with the product lifecycle (10 phases), which forms the basis of the project methodology. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project lifecycle to be able to manage the process effectively.

Topic 1: Use Figure 2.1: **Project Lifecycles** (page 37) to show how the project phases from a number of bodies of knowledge relate to each other. Note that, although the names of the phases might be different, the content is similar.

Topic 2: Use Figure 2.2: **Project Lifecycle** (page 38) to outline the content of each phase, together with a bridge building example. Relate this structure to the type of projects the students are involved with.

Topic 3: Use Table 2.1: **Table of Project Phase Characteristics** (page 40) to list some of the key features of a project phase.

Topic 4: Use Figure 2.4: **Level of Effort**, (page 41) to show how the level of effort (or man-hours) typically varies with time. This can be shown as both; rate of effort, and / or accumulative effort.

Topic 5: Use Figure 2.5: **Level of Influence vs. Cost of Changes** (page 42) to indicate the relative importance of good upfront decision-making compared to the high cost of changes later in the project.

Topic 6: Use Figure 2.7: **Project Methodology** (page 44) to look at the bigger picture of the product or facility lifecycle, including the strategy phases and the operational phases. Use this view to show where the need for a project is developed and how the project will be used after it is constructed.

Topic 7: Use Figure 2.8: **Project Lifecycle Costing** (page 46) to show the resultant cash flow from income and expenditure, and to show how the payback period and breakeven point are calculated. Use the nuclear power station example to show that the disposal costs must be included in the overall lifecycle costing. This model is also used to form the basis of the public private partnership (PPP) method of building infrastructure projects.

Exercise 1: Use Figure 2.1: **Project Lifecycles** (page 37) as a starting point to develop a project lifecycle for a project you are familiar with.

Exercise 2: Use Figure 2.3: **Project Lifecycle** (page 39) as a framework and outline the scope of work in each phase of a project you are familiar with.

Exercise 3: Use Table 2.1: **Table of Project Phases Characteristics** (page 40) as a starting point to discuss what work could be grouped into an independent phase with a distinct deliverable.

PMT2ed (college edition), **Ch3. Project Management Process** (page 50)

The purpose of the **Project Management Process** chapter is to introduce the project management process as a linear sequence of steps, actions or functions that are carried out to achieve predefined objectives, changes or results. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project management process to be able to manage the process effectively.

Topic 1: Use Table 3.1: **Management Processes** (page 51) to show the similarities between a number of different management processes. Point out that the main difference with the project management process is the initiating process and the closing process.

Topic 2: Use Table 3.2: **Table of Different Processes** (page 52) to explain what is a process by using commonly known products.

Topic 3: Use Figure 3.1: **Eastonian Process** (page 53) to show how the (input-process-output) can be used to model many of the special project management techniques.

Topic 4: Use Table 3.3: **Fayol's Management Process** (page 54) to explain the structure of Fayol's original management process.

Topic 5: Use Figure 3.2: **Project Management Process** (page 56) to show how the management process can be applied to managing projects.

Exercise 1: Initiating has a special meaning in the project management context. In your own words, outline what initiating means on your projects.

Exercise 2: Identify a number of everyday items you buy that are made by a manufacturing process.

Exercise 3: Show how the Eastonian process can be applied to problem solving and decision-making.

PMT2ed (college edition), **Ch4. Project Methodology** (page 58)

The purpose of the **Project Methodology** chapter is to show how a company wide methodology can be used to integrate the strategy phases, project phases and operational phases. This chapter will take the project lifecycle a step further and show how the systems approach can interlink the phases and the processes. It is important to convey to the students that it is essential that the project manager understands the project methodology to be able to manage the process effectively.

Topic 1: Use Figure 4.1: **Systems Approach** (page 59) to show how the project lifecycle can be subdivided into a system of interlinked phases, and show how the project management process can be subdivided into a system of interlinked processes.

Topic 2: Use Figure 4.2: **Project Methodology Systems Approach** (page 60) to show graphically how the project lifecycle can be subdivided into a number of interrelated phases and how each phase can be subdivided into the four processes of the project management process, which in turn can be further subdivided into a number of sub-processes.

Topic 3: Use Figure 4.3: **Initiation Process** (page 62) to show how the initiation process can be subdivided into a number of sub-processes.

Topic 4: Use Figure 4.4: **Planning Process** (page 63) to show how the planning process can be subdivided into a number of sub-processes.

Topic 5: Use Figure 4.5: **Execution Process** (page 64) to show how the execution process can be subdivided into a number of sub-processes.

Topic 6: Use Figure 4.6: **Closing Process** (page 65) to show how the closing process can be subdivided into a number of sub-processes.

Topic 7: Use Figure 4.7: **Project Organization Structure** (page 66) to show who is responsible for what and when (the extent of the responsibility).

Exercise 1: Give three examples of systems in your house, car or yacht.

Exercise 2: Using a similar structure to exercise 1, give three examples of management systems within your company.

Exercise 3: Relate Figure 4.7: **Project Organization Structure** (page 66) to the extension of responsibility of three people on a project you are familiar with.

PMT2ed (college edition), **Ch5. Project Stakeholder Management** (page 68)

The purpose of the **Project Stakeholder Management** chapter is to introduce project stakeholder management as a new knowledge area, which includes the processes and activities that enable the project manager to ensure that the project stakeholders' needs and expectations are being addressed. The new PMBOK 5ed (2012) has separated project stakeholder management from project communication management. The main difference is that communication is about the mechanics of supplying information (content, timing, medium, etc.), whereas stakeholder management is about engaging, influencing and involving the stakeholders in the decision-making process. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of stakeholder management to be able to manage the process effectively.

Topic 1: Use Figure 5.1: **Stakeholders vs. Project Phases** (page 70) to show how the stakeholders can be subdivided by project phase. This suggests that the stakeholders are linked to the deliverable – so if the deliverable changes then there will probably be different stakeholders as well.

Topic 2: Use Figure 5.2: **Stakeholder's Organization Levels** (page 72) to show how people tend to communicate with those at their own organizational level, for example, the client's project manager communicates with the contractor's project manager.

Topic 3: Use Table 5.1: **Project Stakeholders** (page 73) to list the different types of stakeholders. Encourage the students to list the type of stakeholders they encounter on their projects.

Exercise 1: It is not possible to satisfy all your stakeholders' needs and expectations. Discuss how you prioritize your stakeholders.

Exercise 2: Discuss how you would identify the users of your project and then determine their needs and expectations.

Exercise 3: Discuss how there will be different stakeholders with each phase.

PMT2ed (college edition), **Ch6. Corporate Strategy Phases** (page 78)

The purpose of the **Corporate Strategy Phases** chapter is to introduce the corporate strategy phases that lead the project lifecycle. The three key phases include the vision phase to give the company direction, the requirements phase to determine what the company must do to maintain competitive advantage, and the business case phase to select a solution to address the corporate requirements. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the corporate strategy phases to be able to manage the process effectively.

Topic 1: Use Figure 6.1: **Project Lifecycle** (page 79) to show the relative position of the corporate strategy phases with respect to the other phases. This diagram also shows how the output from one phase becomes the input for the next phase.

Topic 2: Use Table 6.1: **Corporate Vision** (page 80) to show a list of corporate vision characteristics. It is important for the student to appreciate that the corporate vision determines where the company is striving to position itself in the market, and that the corporate vision should inspire the company personnel to align their personal objectives to follow the corporate vision.

Topic 3: Use Table 6.2: **Corporate Values and Governance** (page 82) to show a list of governance and ethical requirements. These values outline how the company intends to do business.

Topic 4: Use Table 6.3: **Competitive Advantage** (page 84) to show a list of what the company must do to maintain its competitive advantage and stay in business.

Topic 5: Use Table 6.4: **Business Case Structure** (page 86) to show that the purpose of the business case is to provide a solution to the problems, requirements and opportunities outlined in the previous phase.

Exercise 1: Although your CEO might not be directly involved with your projects, through the vision statement, the CEO determines where to position the company in the future. Outline your company's vision and the associated projects to help achieve the vision.

Exercise 2: The company's values should influence how projects are managed. Consider a project you are familiar with and outline how the corporate values influence the project's risk and communication.

PMT2ed (college edition), **Ch7. Project Feasibility Phase** (page 88)

The purpose of the **Project Feasibility Phase** chapter is to outline a feasibility study structure or format, which can be used to assess the feasibility of a range of projects for the company. The feasibility study is an integral part of the initiation phase of the project lifecycle. From an educational perspective the feasibility study forms an excellent structure through which the students can answer their assignments.

Companies invariably have a long list of jobs to complete and an extensive wish list of great ideas and opportunities to exploit. But with limited resources, the company's executives will have to impose capital rationing. This is why, at some point, the project manager will have to conduct a project feasibility study to not only confirm the proposed business cases are feasible but, also, prioritize the business cases so that the most viable can be carried out first. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project feasibility phase to be able to manage the process effectively.

Topic 1: Use Figure 7.1: **Project Lifecycle** (page 89) to show the relative position of the feasibility phase with respect to the other phases.

Topic 2: Use Table 7.1: **Project Charter Format** (page 91) to show the structure of a project charter. The lecturer needs to explain to the students that the project charter is the project manager's key document and outlines what has to be achieved (scope, time, cost, quality etc.), how to manage the project and, most importantly, gives the project manager the authority to use company resources.

Topic 3: Use Table 7.2: **Internal Corporate Constraints** (page 94) to show a typical list of how a company outlines its requirements. It is important to appreciate that this is the priority list because, if there is a conflict of requirements, the corporate list will probably prevail.

Topic 4: Use Table 7.3: **Internal Project Constraints** (page 96) to show a typical list of how the project constraints are outlined. This list needs to consider the build-method constraints.

Topic 5: Use Table 7.4: **Internal Operational Constraints** (page 98) to show a typical list of how the operations manager will impose constraints on the business case. This list needs to consider the operational configuration constraints.

Topic 6: Use Table 7.5: **External Constraints** (page 100) to show a typical list of how the external stakeholders impose constraints on the business case. This list needs to consider the impact the project could have on the stakeholders and, conversely, the impact the stakeholders could have on the project.

Exercise 1: The project charter outlines what the project is to achieve and how it should be managed. Discuss how project charters are used in your company.

Exercise 2: The purpose of the feasibility study is to confirm the company can make the project within the defined constraints. Outline how the constraints establish the boundaries within which your project must be performed.

PMT2ed (college edition), **Ch8. Project Definition Phase** (page 102)

The purpose of the **Project Definition Phase** chapter is to introduce the second project phase, which develops the preferred business case and project charter into a detailed project design and fully integrated project plan. The project design process produces the project design, and the project planning process produces the project plan. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project design and the project planning to be able to manage the process effectively.

Topic 1: Use Figure 8.1: **Project Lifecycle** (page 103) to show the relative position of the project definition phase with respect to the other phases.

Topic 2: Use the sections 2 and 3 to discuss the **Project Design Process** (page 104) and the **Project Design Philosophy** (page 105). These processes obviously relate to the type of project, but it is important to appreciate the consequences of designing in the execution phase where changes could be very expensive.

Topic 3: Use section 5 **Model Testing** (page 107), section 6 **Prototypes** (page 108) and section 7 **Computer Simulation** (page 108) to discuss the different methods available to confirm the capabilities of the design while there is still time to make changes without incurring high cost-to-change.

Topic 4: Use Table 8.4: **Operational Configuration** (page 109) to show how the project operation must be considered and how the project will interface with existing facilities.

Exercise 1: Explain the link between the project feasibility study and the project design.

Exercise 2: Explain the difference between model testing, making a prototype and computer simulation.

PMT2ed (college edition), **Ch9. Project Execution Phase** (page 110)

The purpose of the **Project Execution Phase** chapter is to introduce the third project phase, which makes the deliverable(s) of the project. Many companies see this as the most important phase because this is where the greatest level of effort is exerted and the largest part of the budget is spent. For other companies the project construction/execution phase is seen as simply implementing the project design as per the project plan. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project execution phase to be able to manage the process effectively.

Topic 1: Use Figure 9.1: **Project Lifecycle** (page 111) to show the relative position of the project execution phase with respect to the other phases.

Topic 2: Use Table 9.1: **Project Build-Method** (page 112) to show how to manufacture, construct or perform the project. Discuss the trade-off here with the build sequence, location, equipment and capability of the work force.

Topic 3: Use Table 9.2: **Project Execution Strategy** (page 116) to explain the 'make or buy' decision. Present the 'make' argument when it might be preferable to use in-house resources and contractors working on site compared with outsourcing (buying) the work to another company where the work is performed offsite.

Exercise 1: Explain the difference between the project's build-method and the project's operational configuration.

Exercise 2: Referring to a project you are familiar with, outline the benefits and risks associated with the execution strategy of using in-house resources.

Exercise 3: Referring to a project you are familiar with, outline the benefits and risks associated with the execution strategy of using outside contractors.

Exercise 4: Referring to a project you are familiar with, outline the benefits and risks associated with the execution strategy of outsourcing the work.

PMT2ed (college edition), **Ch10. Project Commissioning and Handover Phase** (page 120)

The purpose of the **Project Commissioning and Handover Phase** chapter is to explain how to officially test and verify the project work has been completed to the required condition and to validate that it functions as per the requirements outlined in the project definition documents (project design, project charter and business case). This phase also formally hands over the project to the client who officially accepts the project. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project commissioning and handover phase to be able to manage the process effectively.

Topic 1: Use Figure 10.1: **Project Lifecycle** (page 121) to show the relative position of the project commissioning and handover phase with respect to the other phases.

Topic 2: Use Table 10.1: **Receive the Deliverables** (page 122) to show how to start the commissioning process by formally transferring the deliverables and paperwork from the execution phase to the project commissioning phase.

Topic 3: Use Table 10.2: **Verify the Scope of Work and Deliverables** (page 123) to show how to confirm the final scope of work, list of deliverables and the required specification.

Topic 4: Use Table 10.3: **Project Testing and Commissioning** (page 124) to show how to test the functionality of the deliverables and how to fine tune the output to achieve the optimum performance.

Topic 5: Use Table 10.4: **Project Handover Process** (page 126) to show how to officially handover the project to the client in accordance with the agreed procedure.

Topic 6: Use Table 10.5: **Project Termination** (page 127) to show how to terminate a phase or project and the wider implications that should be considered.

Topic 7: Use Figure 10.2: **Project Closeout Report** (page 128) to show the link between the project charter and the project closeout report. The project closeout report should confirm the project has achieved the objectives as outlined in the project charter. This section will also outline the format of a project closeout report.

Exercise 1: Give three examples of project testing and commissioning on different types of projects.

Exercise 2: Give three examples of the project handover process.

PMT2ed (college edition), **Ch11. Operational Phases** (page 132)

The purpose of the **Operational Phases** chapter is to introduce the operational phases that follow the project phases. The three key operational phases include the operational startup phase to implement the project into its operating environment, the half-life refit phase to keep the facility up-to-date, and the disposal phase to close down the project and return the site to its original condition. Although the success of these phases is the project sponsor's responsibility, the management of the phases might be assigned to a project manager. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the operational phases to be able to manage the process effectively.

Topic 1: Use Figure 11.1: **Project Lifecycle** (page 133) to show the relative position of the operational startup phase with respect to the other phases.

Topic 2: Use Table 11.1: **Operational Startup Implementation Strategies** (page 134) to show a number of implementation options. Discuss the pros and cons of each.

Topic 3: Use Table 11.2: **Project Upgrade** (page 135) to show a number of examples of project upgrades. If upgrades are considered in the design phase this might greatly ease the upgrade process many years down the track.

Topic 4: Use Table 11.4: **Project Disposal** (page 137) to show a number of decommissioning and disposal considerations. Eventually every project will come to the end of its operating life. Ease of disposal is another consideration that should be considered in the design phase.

Exercise 1: Using a project you are familiar with, discuss the different implementation options.

Exercise 2: Using a project you are familiar with, discuss what would trigger a project upgrade.

Exercise 3: Using a project you are familiar with, discuss how you plan to decommission and dispose of the project.

PMT2ed (college edition), **Ch12. Project Plan** (page 140)

The purpose of the **Project Plan** chapter is to explain how the development of the project plan brings together (integrates) a number of individual plans through a process of trade-offs and compromises, which enable the outcome to converge on an optimum arrangement or baseline plan. The project plan can now be used as the basis of the planning and control system to guide the project to achieve the project's objectives. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the project plan to be able to manage the process effectively.

Topic 1: Use Figure 12.1: **Project Management Plan Flowchart** (page 141) to show the relative position of the individual plans.

Topic 2: Use Figure 12.2: **Project Plan Spiral** (page 142) and Figure 12.3: **Project Control Spiral** (page 143) to show how an iterative process can develop each plan separately and incrementally.

Topic 3: Use Table 12.1: **Project Plan** (page 144) to highlight all the individual plans with a brief description.

Topic 4: Use figure 12.4: **Trade-Offs vs. Project Lifecycle** (page 146) to show the different types of trade-offs within each phase.

Exercise 1: Discuss Figure 12.1: **Project Management Plan Flowchart** (page 141), and compare it with the planning and control cycle you use on your projects.

Exercise 2: Discuss how you establish and control the **baseline plan** on your projects.

Exercise 3: Discuss how the frequency of your reporting should reflect the needs of your projects.

PMT2ed (college edition), **Ch13. Project Scope Management** (page 150)

The purpose of the **Project Scope Management** chapter is to outline the scope management knowledge area, which includes the processes and activities that enable the project manager to ensure that the project's scope includes all the work required to achieve the project objectives. Effective scope management is one of the key factors determining project success. Failure to accurately interpret the client's requirements (problems, needs or opportunities) will produce a misleading definition of the scope of work. If this causes rework and additional effort there might be implications for project time, cost and quality. The scope of work underpins the whole project and is a parameter in all the knowledge areas. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of project scope management to be able to manage the process effectively.

Topic 1: Use Figure 13.1: **Project Scope Management vs. Project Phases** (page 152) to show how the five scope areas are interlinked, like a thread, along the project lifecycle. This shows, for example, how the 'identify requirements' changes with each phase.

Topic 2: Use Figure 13.2: **Scope Definition Process** (page 154) to show how to use the Eastonian model (input-process-output) to develop the scope definition.

Topic 3: Use Figure 13.3: **Scope Change Flowchart** (page 156) to show the scope change process as a logical sequence of steps.

Topic 4: Use the section on **Scope Creep** (page 159) to discuss why this concern needs to be addressed.

Topic 5: Use Figure 13.4: **Scope Validation and Scope Verification** (page 160) to show how scope validation is looking outward to confirm the project has achieved the client or project sponsor's requirements (fit for purpose). And show how scope verification is looking inwards at the project to confirm it has been made to the correct specifications.

Exercise 1: All projects are subjected to **scope changes**. Discuss how you manage scope changes on your projects, and who is responsible for approving the changes (from both client and contractor's perspective). Show a sample of your change request form and impact statement.

Exercise 2: Explain the difference between validation and verification. Give three examples of validation and verification on projects you are familiar with.

PMT2ed (college edition), **Ch14. Work Breakdown Structure** (WBS) (page 162)

The purpose of the **Work Breakdown Structure** chapter is to introduce the **WBS** as one of the special project management techniques within the scope management knowledge area that enables the project manager to define the scope of work. An accurate scope definition ensures the project includes all the work required to achieve the project objectives and only the work required. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the WBS to be able to manage the process effectively.

Topic 1: Use Figure 14.1: **WBS** (page 163) to show the need for a breakdown structure to link the project to the work packages in a logical manner.

Topic 2: Use Figure 14.2: **Product Breakdown Structure** (page 164) to show how a project to build an aircraft (Airbus) can be subdivided into its main assemblies and sub-assemblies (deliverables). Use this structure to point out that the project sponsor is interested in the deliverables and its configuration in the operating environment.

Topic 3: Use Figure 14.3: **Project Breakdown Structure** (page 166) to show the relationship between the PBS deliverables and the WBS work packages, where the work packages are the work to make the deliverables. The WBS should focus on how to develop a structure that subdivides the work into manageable work packages.

Topic 4: Use Figure 14.4: **Transport Breakdown Structure** (page 168) to show how the breakdown structure approach can be used to subdivide many aspects of the project. In this case, how to subdivide the project into a number of large components that can be transported to a certain location for assembly.

Topic 5: Use Figure 14.7: **WBS Numbering System** (page 170) to show how each work package can be uniquely identified.

Topic 6: Use Figure 14.8: **WBS Template** (page 171) to show how a standard format can be used on similar projects.

Topic 7: Use Figure 14.9: **PBS/WBS/CBS/OBS Interface** (page 172) to show how a number of different breakdown structures can be interlinked.

Topic 8: Use Figure 14.10: **Project Control Sheet** (page 173) to show how a spreadsheet format, using the WBS as the structure, can be used to interlink the key parameters.

Exercise 1: Show how the product breakdown structure (PBS) can be used to subdivide the components of a car.

Exercise 2: Show how a high street bank can use the location breakdown structure to subdivide its maintenance projects.

Exercise 3: Subdivide a project you are familiar with into manageable work packages using your preferred breakdown structure. Show the structure and numbering system.

Exercise 4: Develop a project **template** or company template that could be used on a range of projects.

Exercise 5: Show how the **WBS / OBS are** linked on your projects and show how this link can be used to outline the execution strategy (who is going to do the work).

PMT2ed (college edition), **Ch15. Project Time Management** (page 174)

The purpose of the **Project Time Management** chapter is to introduce the project time management knowledge area that includes all the processes and activities to enable the project manage to complete the project on time. This chapter will focus on the characteristics and features of an activity. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of time management to be able to manage the process effectively.

Topic 1: Use Figure 15.1: **Project Management Plan Flowchart** (page 175) to show the relative position of the time management (CPM and Gantt charts) with respect to the other topics. CPM and Gantt charts will be introduced in the following chapters.

Topic 2: Use Table 15.1: **List of Activity Characteristics** (page 176) to show the characteristics and features of an activity.

Topic 3: Use Figure 15.2: **Activity List** (page 178) to show how the WBS work packages can be subdivided into a list of activities.

Topic 4: Use Table 15.2: **Calendar** (page 179) to show how the days when a resource can work is presented.

Topic 5: Use section 5 to explain how to estimate an activity's duration. Show how there is often a trade-off between the level of effort and the resources available – giving a range of durations.

Topic 6: Use section 6: **Time Trade-off with other Knowledge Areas** (page 182) to discuss the time trade-off with other knowledge areas. Show what impact reducing the time available could have on the other knowledge areas.

Exercises 1: Use Figure 15.1 to explain why time management should be considered after scope management, but before the execution strategy.

Exercise 2: Use Table 15.1 to outline the characteristics of an activity on a project you are familiar with.

Exercise 3: Use Figure 15.2 on a project you are familiar with to discuss where a work package ends and an activity starts.

PMT2ed (college edition), **Ch16. Critical Path Method (CPM)** (page 184)

The purpose of the **Critical Path Method** chapter is to introduce the **CPM** as one of the special project management techniques within the time management knowledge area, which enables the project manager to determine the start and finish dates for all the activities, and identify the sequence of activities that form the critical path. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of CPM to be able to manage the process effectively.

Topic 1: Use section 2 to outline the steps to draw a network diagram - particularly focus on how to draw the activities in series and activities in parallel.

Topic 2: Use Figures 16.1 and 16.2: **Activities in Series and Parallel** (page 187) to show the network diagram which is at the heart of the CPM. It is essential to get the activity logic right first before proceeding with the time calculations. Use these network diagram figures to show how activities in series and parallel are presented.

Topic 3: Use Figure 16.4: **Forward Pass** (page 190) to show how to calculate the early start (ES) and early finish (EF) for all the activities. Then reverse the process and calculate the later start (LS) and late finish (LF). The difference between the ES and EF will give the float and, where the float is zero, join the activities on the network diagram to show the critical path. Emphasize that the critical path is a critical item of information that is used in many of the special project management calculations.

Exercise 1: Draw a logic network diagram for a project you are familiar with. Identify any hard and soft logic considerations you have made. If you have access to planning software use it to perform the same exercise.

Exercise 2: Given the logic diagram you have developed in exercise 1 (or use another network diagram), add the activity durations and perform a forward pass, a backward pass, calculate the float, and identify the critical path. Assume continuous working (seven days a week) and unlimited resources.

Exercise 3: Given the network diagram you have developed in exercise 2 (or use another network diagram), introduce a five day calendar or work pattern and show how the project's duration changes.

Exercise 4: Explain why it is important to be able to identify the critical path.

PMT2ed (college edition), **Ch17. Gantt Charts** (page 198)

The purpose of the **Gantt Charts** chapter is to introduce the Gantt Chart as one of the special project management techniques within the time management knowledge area, which enables the project manager to present the project's schedule in an easy to understand barchart format. The scheduled Gantt chart is one of the most widely used planning and control documents for communicating schedule information because it provides an effective presentation, which is not only easy to understand and assimilate by a wide range of people, but also conveys the planning and scheduling information accurately and precisely.

The Gantt chart should logically follow the CPM chapter, which outlines the sequence of activities, and calculates the start and finish dates. However, from a learning perspective students and the managers of small projects often prefer to start (and finish) with the Gantt chart. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of the Gantt chart to be able to manage the process effectively.

Topic 1: Use section 1 **(What is a Gantt Chart?)** (page 199) to give an historical perspective to the Gantt chart - as this is probably the first true special project management technique.

Topic 2: Use Figure 17.1: **Simple Gantt Chart** (page 199) to show the basic structure of a Gantt chart.

Topic 3: Use Figure 17.2, Table 17.1 and Figure 17.3: **Gantt Chart** (page 201) to show how the CPM calculated data is transferred to a table, which in turn is transferred to the Gantt chart. Although this will be performed by your planning package it is useful the be aware of the process happening behind the scene.

Topic 4: Use Figures 17.4 and 17.5: **Scheduled Gantt Chart** (page 201) to show how activity float is presented.

Topic 5: Use Figures 17.6 and 17.7: **Sorted Gantt Chart** (page 202) to show how the activity list can be selected and sorted to aid presentation and communication.

Topic 6: Use Table 17.2 and Figure 17.8: **Hammock Gantt Chart** (page 204) to show how sub-activities can be gathered together, or rolled up into one master or hammocked activity. Show how this can be used to simplify reports and vary the level of information.

Topic 7: Use Figure 17.9: **Event Gantt Chart** (page 205) to show how events, milestones or keydates are presented and can be used to plan and control the project. Milestones offer the project manager a simple technique for project control – the work has either started or not started – or the work has either finished or not finished.

Topic 8: Use Figure 17.10: **Rolling Horizon Gantt Chart** (page 206) to show how the Gant chart format can be used to only include the work happening in the short term (maybe one or two weeks ahead).

Topic 9: Use Table 17.3 and Figures 17.11: **Revised Gantt Chart** (page 207) to show how the project's progress can be inserted inside the activities' bars. This a visual method of being able to assess a project's progress at a glance.

Exercise 1: Develop a Gantt chart for a small project showing; activities, start and finish dates.

Exercise 2: A Hammock is a useful technique to group together or roll-up a number of interrelated sub-activities and show them at an appropriate level of detail (page 204). Show how a hammock can be used on a project you are familiar with.

Exercise 3: The Milestone or Keydate plan is a useful technique to focus on an event (page 205). Show how milestones can be used on a project you are familiar with.

Exercise 4: Show how a Revised Gantt chart can be used on a project you are familiar with.

Exercise 5: The Rolling Horizon Gantt chart (page 206) focuses on the work taking place in the next few weeks. Show how the Rolling Horizon Gantt chart could be used on a project you are familiar with.

PMT2ed (college edition), **Ch18. Project Procurement Management** (page 210)

The purpose of the **Project Procurement Management** chapter is to introduce the project procurement management knowledge area, which includes the processes and activities that enable the project manager to acquire the goods and services required to perform the project's scope of work. This could be drawings, materials, equipment or professional services from a number of vendors and suppliers, or company departments outside of the project team. It is important to convey to the students that it is essential that the project manager understands the project procurement process to be able to manage the process effectively.

Topic 1: Use Figure 18.1: **Project Management Plan Flow Chart** (page 211) to show the relative position of the execution strategy (procurement schedule and resource plan) with respect to the other topics.

Topic 2: Use Figure 18.2: **Procurement Process** (page 212) to show how the procurement process can be presented as a sequence of discrete activities within a procurement cycle.

Topic 3: Use section 3 **(Just-In-Time)** (page 217) to explain the JIT concept and how it relates to managing projects.

Topic 4: Use Figure 18.3: **Procurement Schedule** (page 218) to show how the lead time and JIT determine when a component must be ordered by. If the component is ordered later than the order by date (OBD) then discuss the project manager's options.

Topic 5: Use section 5 (page 220) to explain procurement expediting and what steps the project manager can take to 'make-it-happen'.

Exercise 1: Use Figure 18.1: **Project Management Plan Flowchart** (page 211) to explain why the procurement process follows the time management process.

Exercise 2: Consider a project you are familiar with and discuss the execution strategy (buy or make).

Exercise 3: Outline your preferred procurement cycle and compare it with Figure 18.2 (page 213).

Exercise 4: Show how the late delivery of procured items changes your schedule Gantt chart.

Exercise 5: Discuss how you have used procurement expediting on a project you are familiar with.

PMT2ed (college edition), **Ch19. Project Resource Management** (page 222)

The purpose of the **Project Resource Management** chapter is to introduce the resource scheduling technique, which is one of the special techniques within the resource management knowledge area that links the project resource requirements with the company's resource pool and the project plan. In the project context, the resources are the workforce making the project. It is important to convey to the students that it is essential that the project manager understands the characteristics and features of resourcing scheduling to be able to manage the process effectively.

Topic 1: Use Table 19.1: **Resource Table** (page 223) and figure 19.1: **Gantt Chart and Resource Histogram** (pages 224) to show how the resource histogram is developed from the schedule Gantt chart.

Topic 2: Use Figure 19.2: **CPM Network Diagram** (page 226) and Figure 19.3: **Smoothed Gantt Chart and Resource Histogram** (page 227) to explain how the resource histogram can be smoothed by moving resources (and/or activities) within their float.

Topic 3: Use Figure 19.4: **Time-Limited Resource Scheduling** (pages 228) to show the impact limiting the project's end date has on the level of resources.

Exercise 1: Use Figure 18.1: **Project Management Flow Chart** (page 211) to discuss why procurement should be considered before resources on some projects, but resources should be considered before procurement on other projects.

Exercise 2: Draw a simple resource histogram for your project using one or two resources.

Exercise 3: From the resource histogram you have drawn in exercise 2 - draw an 'S' curve of cumulative resources.

Exercise 3: Use Figures 19.4, 19.5 and 19.6 (page 228) to discuss the difference between time-limited resource smoothing and resource-limited resource smoothing.

PMT2ed (college edition), **Ch20. Project Cost Management** (page 232)

The purpose of the **Project Cost Management** chapter is to introduce the project **cost management** knowledge area, which includes the processes and activities that enable the project manager to complete the project within budget. Completing the project within budget is one of the success criteria set out in the project charter. It is important to convey to the students that it is essential that the project manager understands the project cost management to be able to manage the process effectively.

Topic 1: Use Figure 20.1: **Project Management Plan Flowchart** (page 233) to show the relative position of cost management with respect to the other topics.

Topic 2: Use Figure 20.2: **Estimating Continuum** (page 234) to show how the level of accuracy of the estimate is related to the level of effort and the cost to produce the estimate.

Topic 3: Use Figure 20.3: **Top-Down and Bottom-Up Estimating** (page 235) to show how high level estimating techniques can produce a ball-park figure very quickly, whereas, a more detailed estimate can be produced at the work package level.

Topic 4: Use section 4 to explain the different types of costs; direct costs, indirect costs, fixed and variable costs, together with labour costs, procurement (materials) costs, and unit rates.

Topic 5: Use section 8 to explain how to establish a budget and Table 20.4: **Budget Format** (page 243) to explain how to present the subdivision of the budget.

Exercise 1: Use Figure 20.1: **Project Management Flow Chart** (page 233) to discuss the relative position of cost management with respect to the other knowledge areas.

Exercise 2: Use Figure 20.2: **Estimating Cost Continuum** (page 234), to discuss the estimating trade-offs between the estimate's accuracy with the time and cost to produce the estimate. How does your estimate's accuracy relate to your profit margin? What do you call your estimates (budget, ball-park figure)?

Exercise 3: Consider a project you are familiar with and discuss when it is appropriate to use top-down estimating and bottom-up estimating (page 235).

Exercise 4: Differentiate between the following costs on your projects; direct costs, indirect costs, fixed costs and variable costs (page 236).

Exercise 5: Many projects are estimated on labour costs and material costs. Using the Table 20.1 proforma (page 238) develop a labour rate for your project.

Exercise 6: Develop an estimating proforma to estimate the project office costs. Try to relate the estimate to a project management fee as a percentage of the contract price.

PMT2ed (college edition), **Ch21. Project Cash Flow** (page 246)

The purpose of the **Project Cash Flow** chapter is to introduce the project cash flow technique, which is one of the special project management techniques within the cost management knowledge area that enables the project manager to present the flow of monies through the project's account. This involves estimating the timing and amounts of incomes and expenditures. Although the project's accounts might be setup to make a profit, if there is negative cash flow during the project this must be identified and financed. It is important to convey to the students that it is essential that the project manager understand the cash flow techniques to be able to manage the project's cash flow effectively.

Topic 1: Use section 1 **(Project Cash Flow Example 1)** (page 248) to show how money flows through the cash flow statement.

Topic 2: Use Figure 21.1: **Cash Flow Distribution** (page 251) to show how the cash flow timing can be very different to when the activity's work is performed.

Topic 3: Use section 3 **(Project Cash Flow Example 2)** (page 252) to show how the cash flow can vary from the schedule of work on a schedule Gantt chart format.

Topic 4: Use Figure 21.5: Gantt Chart (page 258) and Figure 21.6: **'S' Curve** (page 258) to show how to draw the cost 'S' curve from the schedule Gantt chart. In the *Earned Value* chapter this curve will be called the planned value (PV), or baseline plan.

Exercise 1: Show how your project's monthly income and expenses can be presented on the scheduled Gantt chart (page 255).

Exercise 2: Your income and costs might have different timings (page 251) - give examples.

Exercise 3: If your cash flow statement shows negative cash flow, outline your options with respect to changing the cash flow, financing the cash flow, or changing the scope of work?

Exercise 4: If you have tight budget constraints which cannot be exceeded, the *cost-to-complete* (page 257) will control the project's scope of work. Discuss this issue and give examples where the scope of work has been reduced or increased. Why should **sunk costs** not influence future investments?

Exercise 5: The **Earned Value** technique uses the cost 'S' curve to plan, monitor and forecast the project's performance. Produce a cost 'S' curve for your project similar to page 258.

PMT2ed (college edition), **Ch22. Project Control** (page 262)

The purpose of the **Project Control** chapter is to introduce the project control technique, which is of the special project management techniques within the project integration knowledge area that enables the project manager to monitor and control the project's progress. Projects do not naturally finish on time, within budget and to the required quality – they must be guided to the finish line. It is important to convey to the students that it is essential that the project manager understands project control techniques to be able to control the project effectively.

Topic 1: Use Figure 22.1 **Project Control Cycle** (page 263) to discuss the sequence of project control steps, and to introduce the different elements of the control cycle.

Topic 2: Use Figure 22.2: **Over Optimistic Reporting** (page 266) to demonstrate the need for accurate reporting. It is a human failing that we generally over optimistically report our progress, either out of ignorance, or knowingly with the hope of catching up later. The main concern for project manager is that if they think the project is on course they will not apply more resources. But if they find the project is behind when it is over 80% complete - it is then probably too late to apply more resources to bring the project in on time.

Topic 3: Use Figure 22.3: **Influence / Cost of Change Curve** (page 267) in conjunction with Figure 22.2: **Overoptimistic Reporting** (page 266) to support the argument that, for effective project control, any changes must be made early in the project when the level of influence is high and the cost of change is lower.

Topic 4: Use Table 22.1: **Typical Data Capture Template** (page 269) to walk-through a structured method of determining percentage complete. The students should relate the data capture proforma to their own project environment.

Topic 5: Use Figure 22.4: **Problem Solving and Decision-Making Process** (page 270) and Figure 22.5: **Problem Solving – Decision-Making Process** (page 271) to show the relationship between the two techniques and then develop them separately. Present problem solving as a means to generate a number of possible technical solutions, and present decision-making as a means of gaining collective support for one course of action.

Exercise 1: Many people are all guilty of over optimistic reporting. Give a recent example where this has occurred on one of your projects and outline what steps you have taken to prevent it happening again.

Exercise 2: Project control monitors the project's performance and guides it to the planned completion. Identify all the items on your project that are included in the **baseline plan** and show how these are monitored and controlled.

Exercise 3: Using the problem solving and decision-making process, show how you solve problems and make decision on your projects.

PMT2ed (college edition), **Ch23. Earned Value** (page 276)

The purpose of the **Earned Value** chapter is to introduce the earned value technique, which is one of the special project management techniques within the project integration knowledge area that enables the project manager to plan and control the project's progress. Although earned value was originally setup to manage project costs (as the name suggests), in practice, it is used to track man-hours. Earned value works particularly well for projects where the scope of work can be subdivided into jobs or work packages of 50 man-hours. It is important to convey to the students that it is essential that the project manager understands the earned value technique to be able to monitor and control the project's progress effectively.

Topic 1: Use Figure 23.1: **Project Expenses Against Time** (page 277) and Figure 23.2: **Project Progress against Time** (page 278) to demonstrate what could happen if expenditure and progress are reported separately.

Topic 2: Use section 2 **Earned Value** (page 279) to list all earned value terms and calculations. This section then explains all the terms and calculations with a worked example. It is important to understand the earned value abbreviations as that is usually all that is seen on the earned value graphs and tables.

Topic 3: Use Figure 23.7: **Earned Value Extrapolation** (page 287) to discuss the extrapolation options from timenow to the end of the project.

Topic 4: Use Figures 23.8: **Earned Value template** (page 288) to outline how to tackle the thirteen earned value exercises in table 23.3 (page 288). These thirteen exercises cover all the different combinations of PV, EV and AV.

Topic 5: Use Table 23.4: **Earned Value Table** (page 291) to show the arrangement of a typical table of earned value parameters.

Exercise 1: The starting point for **Earned Value** is to draw the PV (planned value) 'S' curve. This can be expressed as cost against time, or manhours against time. Show how this can be used on your project.

Exercise 2: Use Figure 23.7: **Earned Value Extrapolation** (page 287) to show the extrapolation of PV on your projects from timenow to completion.

Exercise 3: When the difference between the planned value (PV) and the earned value (EV) is expressed in dollars or manhour values, show how this can be translated into time (page 289).

Exercise 4: Show how **Earned Value** variances (SV and CV) can be used for Management-by- Exception reporting (page 289).

Exercise 5: Earned Value tracks the amount of work being performed - but how can you ensure the work is being done in the **right** sequence?

PMT2ed (college edition), **Ch24. Project Quality Management** (page 294)

The purpose of the **Project Quality Management** chapter is to introduce the project quality management knowledge area, which includes all the processes and activities to enable the project manager to ensure the project achieves the required condition. Achieving a required level of quality and functionality is one of the objectives set out in the project charter. It is important to convey to the students that it is essential that the project manager understands the quality techniques to be able to manage the quality process effectively.

Topic 1: Use section 1: **What is Project Quality Management** (page 295) to outline that project quality management consists of: quality planning, quality assurance, quality control and continuous improvement.

Topic 2: Use Figure 24.1: **Quality Planning Process** (page 296) to show the 'input-process-output' of the quality planning process. This process defines the 'r**equired condition**' for the quality management system to achieve.

Topic 3: Use Figure 24.2: **Quality Assurance Process** (page 297) to show how the 'input-process-output' develops the **Quality Assurance Plan**. Quality assurance is the systematic process of defining, planning and implementing the management process in order to provide adequate confidence that all aspects of the project will be consistently manufactured to the required quality. In other words, the company is capable of performing the work.

Topic 4: Use Figure 24.3: **Gantt Chart** (page 300) to show how a **Quality Control Plan** can be developed from a schedule Gantt chart. Discuss how the level of inspection can impose control on the project.

Topic 5: Use section 5: **Continuous Improvement** (page 302) to show how companies use quality circles to describe their ongoing, continuous effort of involving and engaging the workforce and project team to improve information, materials, products, services and processes related to the project environment.

Topic 6: Use section 6: **Quality Trade-off with the other Knowledge Areas** (page 304) to discuss the quality trade-off with the other knowledge areas. Show what impact reducing the level of quality could have on the other knowledge areas.

Exercise 1: Consider a project you are familiar with, and outline your quality planning process to identify the quality requirements and standards for the project, and then show how you developed a method to achieve the objectives.

Exercise 2: Explain the difference between quality assurance and quality control.

Exercise 3: The **Quality Control Plan** (page 299) is an excellent document for integrating the scope of work with the required condition and the level of inspection. Show how this can be applied to your projects.

Exercise 4: Outline how **quality circles** (page 302) could be used on your projects to continuously improve the production efficiency, and product quality.

PMT2ed (college edition), **Ch25. Project Risk Management** (page 306)

The purpose of the **Project Risk Management** chapter is to introduce the project risk management knowledge area, which includes the processes and activities that enable the project manager to ensure the project can achieve its objectives at an acceptable level of risk. The acceptable level of risk is set out in the project charter and the corporate values statement. It is important to convey to the students that it is essential that the project manager understands risk theory to be able to manage the risk management process effectively.

Topic 1: Use Figures 25.1: **Risk Management Process** (page 307) to discuss the main parameters of the risk management model and show how they are related.

Topic 2: Use Figure 25.2: **Risk Management vs. Project Lifecycle** (page 308) to show how the type of risk, type of opportunities, and the amount at stake change with each phase as the project progresses through the project lifecycle.

Topic 3: Use section 3: **Risk Identification** (page 311) to show the process of identifying risks that could prevent the project achieving its objectives. Use Table 25.2: **Project Failures** (page 312) to list the type of failures the project manager should be aware of.

Topic 4: Use section 4: **Risk Quantification** (page 314) to show how to quantify the impact, consequences and the frequency of the risk happening.

Topic 5: Use section 5: **Risk Response** (page 315) to outline how to develop a risk response that defines ways to reduce risk to an acceptable level and enhance opportunities before they occur.

Topic 6: Use Figure 25.5: **Contract Risk** (page 316) to show how the different contracts deflect and accept risks and opportunities.

Topic 7: Use Figure 25.6: **Risk Control Steps** (page 318) to show a six step risk control process which integrates risk process with risk factors.

Exercise 1: The starting point for managing risk is to determine the company's acceptable level of risk, because all project risks, unless the project is given a dispensation, should be within the acceptable range of corporate risk. Consider a company you are familiar with, and outline how the company determines its acceptable level of risk.

Exercise 2: From exercise 1, translate the company's acceptable level of risk into the project's acceptable level of risk. This might be documented in the project charter and become a project constraint and critical success factor.

Exercise 3: A risk can be defined as an event or situation that prevents the project achieving its objectives. Outline how a company you are familiar with determines its objectives.

Exercise 4: From the project objectives you listed in exercise 3, identify the risks that might prevent you from achieving the objectives.

Exercise 5: From the risks identified in exercise 4, develop a response which will either; eliminate, mitigate, deflect or accept the risks.

Exercise 6: Outline how you would identify and respond to the risks associated with the PMBOK's ten knowledge areas. For example, to address time risk you would carry out a CPM calculation to determine the start and finish of all the activities, then monitor and control the project's progress to achieve the time objectives.

Exercise 7: Producing a **Risk Management Plan** (page 318) is only half the story - consider a project you are familiar with and outline how the risk management plan is monitored and controlled.

Exercise 8: Many natural and man-made disasters cannot be deflected, therefore, they must be accepted with a contingency. A natural disaster might be caused by a storm, flood, fire, or earthquake, while man-made disasters may include fire, loss of power, loss of communications, loss of data, or chemical contamination. Consider a company you are familiar with and discuss the ultimate contingency - the **Disaster Recovery Plan**. Outline how is it developed and how is it managed and who will be responsible for managing the disaster recovery. Outline some of the typical actions you will take in the first 24 hours.

PMT2ed (college edition), **Ch26. Project Communication Management** (page 320)

The purpose of the **Project Communication Management** chapter is to introduce the project communication management knowledge area, which includes the processes and activities that enable the project manager to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and the ultimate disposal of project information. Communication is one of those management subjects that is hard to separate from what comes naturally, so why does it warrant being a project management knowledge area? The reason is that, for a project to succeed, there is a need for lines of communication to continuously issue instructions, monitor progress, solve problems, make decisions, resolve conflicts, and supply relevant information. It is important to convey to the students that it is essential that the project manager understands communication theory to be able to manage the project's communication effectively.

Topic 1: Use Figure 26.1: **Lines of Communication** (page 322) to show why it might be necessary to modify the company's communication management system to meet the needs of the project sponsor, the needs of the project manager and the needs of the project stakeholders.

Topic 2: Use section 3: **Project Meetings** (page 324) to show why project meetings are an important forum for the project manager to lead and manage the project participants, and show the typical type of meetings the project manager will hold. Use Table 26.2: **Project Meetings** (page 325) to outline the structure of a typical meeting.

Topic 3: Use section 4: **Project Reporting** (page 327) to confirm the importance of project reporting, the reporting process and show some of the typical type of project reports.

Topic 4: Use section 5: **Document Control** (page 329) to explain what is an information management system, and discuss how to decide on the appropriate level for the project.

Topic 5: Use section 6: **Communication Trade-off with the other Knowledge Areas** (page 330) to discuss why the project manager needs to be able to manage the impact and changes to the level of communication could have on the other knowledge areas.

Exercise 1: Meetings Bloody Meetings have never been the same since John Cleese's series of management videos. Outline how you conduct your handover meetings.

Exercise 2: What documents or reports do you request at your progress meetings? How do you vary the frequency of your meetings to reflect the needs of the project?

Exercise 3: Outline how your document control system controls the flow of documents on your projects.

Exercise 4: Use this extract from the Economist as a case study for students to discuss how the Internet could be used to enhance their project's efficiency. '*The construction industry in America losses $200 billion a year on project problems; inefficiencies, mistakes and delays. To address these losses business-to-business (B2B) companies plan to turn construction projects into an efficient virtual process using internet technology*.' The Economist goes on to say that the Internet can create a web site for all the project participants to communicate such items as; design changes, specification changes, revised delivery dates, document control, and offer a faster response to requests for information. The Internet can also integrate the project office of the builders or manufacturers and suppliers in the same way as supermarkets operate. Although the systems approach reduces flexibility (new suppliers cannot be quickly added to the system) it does offer JIT material supply efficiencies (see

page 217 for the benefits of JIT). The Internet can also create business-to-business (B2B) Internet hubs where news, prices, gossip, and job opportunities can be communicated. With sufficient users the Internet will become the new marketplace cutting out the traditional middlemen.

PMT2ed (college edition), **Ch27. Project Leadership** (page 332)

The purpose of the **Project Leadership** chapter is to introduce project leadership as one of the special project management techniques within the human resource management knowledge area, which enables the project manager to lead and manage the project team and other participants. For project managers to be effective and successful they must not only demonstrate effective project management and technical skills, but must also practice an appropriate style of leadership. It is important to convey to the students that it is essential that the project manager understands leadership to be able to lead the project team effectively.

Topic 1: Use Figure 27.1: **Situational Leadership** (page 334) to show how to lead the four combinations of competence and behavior.

Topic 2: Use Table 27.2: **Leadership Traits** (page 336) to list some of the desirable leadership traits.

Topic 3: Use Figure 27.2: **Responsibility-Authority Gap** (page 337) to highlight the problem when the project manager's responsibility is greater than their authority. Discuss how the methods to gain power can be used to address the responsibility-authority gap.

Topic 4: Use Figure 27.3: **Action Centred Leadership** (page 338) to discuss the interaction between the task, the team and the individual.

Topic 5: Use Figure 27.4: **Decision-Making Continuum** (page 340) to discuss the different ways of making a decision and how they impact on the project team's input (contribution) and acceptance.

Topic 6: Use Figure 27.5: **Herzberg's Motivation and Hygiene Factors** (page 343) to outline what factors motivate individuals and what hygiene factors de-motivate individuals.

Topic 7: Use Figures 27.6: **Maslow's Hierarchy of Needs** (page 344) to outline the corner stone of motivation theory.

Topic 8: Use Table 27.5: **Conflict** (page 345) to discuss a number of different ways to control conflict.

Topic 9: Use section 10: **Delegation** (page 346) to discuss the delegation process.

Exercise 1: Discuss how you vary your leadership style to suite the situational.

Exercise 2: Outline your inherent leadership traits that help you become an effective leader.

Exercise 3: Discuss how you gain power and influence to address the responsibility-authority gap.

Exercise 4: Discuss the actions you take to support the project team and support the individual team members (see Action Centred Leadership page 338).

Exercise 5: Consider the Decision-Making Continuum (page 340) and outline how you prefer to make decisions on your projects and give some examples. Also outline how your decision-making approach might change under different circumstances.

Exercise 6: Consider Herzberg's Motivation and Hygiene Factors (page 342) and outline what factors motivate you and what hygiene factors de-motivate you. Also relate these factors to the people that report to you.

Exercise 7: Consider Maslow's Hierarchy of Needs (page 344) and outline how you have passed through the different stages of needs on your previous projects.

Exercise 8: Interpersonal conflict with your least preferred co-worker is one of the biggest executive stress raisers (page 345). Outline your experiences of interpersonal stress and how you dealt with them.

Exercise 9: Many project managers hate to delegate work because they are concerned the job will not be done to the required standard (page 346). Outline how you delegate on your projects and discuss the successes and problems you have experienced.

PMT2ed (college edition), **Ch28. Project Teams** (page 348)

The purpose of the **Project Teams** chapter is to introduce the management of project teams, which is one of the special project management techniques within the human resources knowledge area that enables the project manager to lead and manage multi-disciplined teams within the project management office (PMO). It is important to convey to the students that it is essential that the project manager understands team dynamics to be able to manage the project team effectively.

Topic 1: Use Figure 28.1: **Project Team vs. Group** (page 349) to show why the project manager needs to strike a balance between controlling the team members directly and a freer arrangement that encourages open interaction, which should increase creativity, innovation and commitment.

Topic 2: Use Table 28.1: **Team Charter** (page 350) to show how to develop a framework of a team charter that can be used to establish the ground rules for the team.

Topic 3: Use Table 28.2: **Team Development Phases** (page 352) to show how the dynamic process of team development can be subdivided into a number of sequential phases. From the project manager's perspective it is important to lead the team through the different phases, particularly the storming phase, which could impact on the team's effectiveness.

Topic 4: Use Figure 28.3: **Team Building Lifecycle** (page 354) to show that the natural rate of team building is a slow process. If this is too slow for the project, then team building techniques should be considered to accelerate the team building process.

Topic 5: Use Table 28.3: **Levels of Team Building** (page 355) to show that team building can be subdivided into a number of sequential team building levels. It is important to distinguish between the different levels because the activities are different.

Exercise 1: Discuss this statement with respect to your projects '*A team implies a number of people who interact and work together, whereas a group of people implies a number of people who, although they may be on the same project, are working as individuals*.'

Exercise 2: Discuss how you would develop a team charter for your project team.

Exercise 3: Discuss how you would manage the project team through team development phases.

Exercise 4: Discuss why companies should consider using team building techniques.

Exercise 5: Discuss how the different levels of team building (page 355) could be applied to your project team.

Exercise 6: Team synergy is a favourite MBA buzz word (page 357). Discuss how team synergy has worked for you on your projects.

Exercise 7: Text books often suggest the ideal team size should be between five and ten people. What is your team size and have you experienced teams subdividing as they grow in number?

PMT2ed (college edition), **Ch29. Project Organizational Structures** (page 358)

The purpose of the **Project Organizational Structures** chapter is to introduce the project organization structures as one of the special project management techniques within the human resource knowledge area, which enables the project manager to lead and manage a multi-discipline project organization. It is important to convey to the students that it is essential that the project manager understands organization theory to be able to manage the project organization structures effectively.

Topic 1: Use Table 29.1: **Project Organization Structure** (page 359) to outline the purpose of a project organization structure.

Topic 2: Use Figure 29.1: **Project Organizational Structure Continuum** (page 360) to discuss the transition from the functional organizational structure, to matrix structure, to the pure project organizational structure.

Topic 3: Use Figure 29.2: **Functional Organization Structure** (page 361) to outline the advantages and disadvantages of using a functional organization structure to manage projects.

Topic 4: Use Figure 29.3: **Matrix Organization Structure** (page 363) to show how the lines of communication, lines of authority and lines of responsibility within a matrix organizational structure are orientated. Outline the advantages and disadvantages of using a matrix organization structure to manage projects – particularly multi-disciplined projects.

Topic 5: Use Figure 29.4: **Pure Project Organization Structure** (page 365) to outline the advantages and disadvantages of using a pure project organization structure to manage projects.

Exercise 1: Discuss the purpose of a project organization structure (page 359).

Exercise 2: The organization structure continuum figure 29.1 (page 360) outlines how there could be a division of responsibility and authority. Discuss how this could be applied to your projects.

Exercise 3: Discuss how the functional organization structure can be used in total or part to manage the type of projects you are involved with.

Exercise 4: The matrix organization structure is often presented as the natural project organization structure because it enables a temporary project organization structure to be overlaid on a permanent functional organization structure. Discuss how this applies to your projects.

Exercise 5: Large capital projects tend to become an organization on their own. Discuss when the pure project organization structure is an appropriate structure to manage projects.