Annex B: Ace Training Ltd. – Complete Case Study

Introduction

In this annex we collect together the documents relating to the main case study used throughout the book (Ace Training Ltd.). Although much of this material has been incorporated in a number of chapters, collecting all the components together provides coherence. We hope that this example will stimulate you to design your own triggers, and adapt them to your own teaching and learning situation.

The following PBL example occupies the first semester of a second year undergraduate module on computer networking for students studying B.Sc. Information Technology. It reflects work that a network analysts/designers would be expected to do, though in practice the work would be distributed over a number of different employee roles.

The entire module is designed for a study time of 150 hours, over a 12 week semester. It is designed for teams of four to five students. Student are novices at PBL and are prepared with workshops introducing PBL and team working skills within the first week, prior to introduction of the Problem Statement.

The module comprises three PBL cases:

- PBL1: Requirements Analysis
- PBL2: System Specification
- PBL3: System construction

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For each of these PBL cases, we have included the problem-statement as given to students, the facilitator guide and the assessment criteria. The subject-specific learning outcomes related to this case are as follows:

1. Critically analyse the requirements for a small-scale network.
2. Synthesise and evaluate a design for a solution to a network requirement.

Since this is the first experience students have of Problem-based Learning, the case is presented as a role play; students initially identify questions that need answering to produce a specification that is complete and unambiguous. The PBL case fits in the “PBL for professional action” model category (Savin-Baden, 2000) though there is quite a large knowledge component in the subject area of computer networking.

Students obtain the information by identifying suitable employees to interview and carrying out the interviews. The employees are role-played by faculty members. Feedback is provided at the requirement specification stage to ensure that they can work from a reasonable set of requirements.

The draft system specifications are also formatively assessed. Summative assessment comprises: Examination (multi-choice questions), Final Proposal, team presentation, practical network demonstration, Individual research handouts and peer assessment of team working.

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### PBL Case 1: Ace Training Ltd.

#### Problem Statement

Ace Training Ltd. is a small company, which delivers technical computer-training courses at its training centre in Manchester, and on customer premises throughout the UK. It employs a Sales manager, 10 sales staff, two marketing people, and two accounts staff in its head office in Liverpool. The Managing Director (MD), his secretary and switchboard/receptionist are also located there.

At the training centre there are the following employees: a manager, two administrators, one technician and ten instructors.

The sales representatives make the vast majority of sales over the telephone. There is very little use of information technology in the head office. The marketing department has one Apple Macintosh® computer, the accounts department uses one PC running Sage® accounting software and the Sales
Annex B: Ace Training Ltd. – Complete Case Study

The department has one PC for preparing quotes. The MD’s secretary also has a computer.

The Managing Director views the current system as inefficient. He has called in your team, as consultants, to advise him. He believes a network for the head office will improve sales performance significantly. Your terms of reference are:

*To design and present proposal for purchase, implementation and support of new network for Sales tracking, accounts, and general administration.*

This is a sizeable task, despite the small scale of the company. Clearly such factors such as cost of the solution, training and support are required for a comprehensive solution.

There is insufficient information given above to specify the solution precisely. You will need to find out additional information by arranging interviews with appropriate people in the company. You are restricted to two twenty-minute interviews.

**Deliverables**

1. At the end of the first session (week 1): Submit a plan to your tutor, outlining information you need to obtain from the interviews and learning issues you have generated.

2. Your team should produce a *User Requirements Specification in Week 3* of the module (end of PBL1). The information for this document should be obtained from the problem statement; together with information you obtained by interviews. A template for this specification is available (see module Web site PBL1 information page).

3. Your team should produce a *final proposal in week 11* according to the proposal template (see module Web site PBL1 information page). This will comprise your requirements from PBL1, and solution from PBL2. Your team should present your solution to the board of Ace Training Ltd in week 12. A short *PowerPoint presentation* is expected as well as the written report. The presentation should last 15 minutes, with a further 5 minutes for questions.

4. Your team will demonstrate the network you have constructed after PBL3, in week 11.
Assessment Criteria/Weightings

Assessment criteria will be available from the module Web site.

Further Information

Ace Training Ltd. Business Issues

1. The company has grown rapidly and a number of problems have arisen that have caused serious inefficiencies in the sales processes. For example: All customer sales records are all kept on paper. Each sales rep keeps a diary and card index of the customers that they are responsible for. This means that the information on a particular customer is difficult to find—especially if their sales rep is not in the office. This inefficiency has led to a number of lost sales opportunities. Since the sales people are largely paid on commission, this has caused low moral (and limited profits). The ACTI™ Contact management software from Sage® group plc. (http://www.sage.com/) has been selected as the preferred product.

2. A consequence of the new way of working is that maximum downtime of the system must be 2 hrs.

3. The Training Centre manager often exchanges faxes with the Sales manager.

4. The Accounts department has an old version of Sage® Accounts, which does not cope with multiple currencies (in particular the Euro).

Scope

The Manchester training centre does not require networking, but the training centre manager will need access to e-mails (via the Internet).

Advice

1. Analysing information is an important skill. Follow the PBL stages (see module guide); identify issues to clarify from the problem statement, identify information you need to obtain from the company to complete your requirement specification, identify any learning you need to undertake before the interviews. Create a plan, which should be submitted to your tutor at the end of the class.
2. Elect a team leader for this PBL case, and a scribe (secretary).
3. You should also keep records of all meetings (see PBL guidance).
4. Remember team working principles you learned in the PBL introduction workshop and the roles of team leader and scribe. Make sure you involve everyone!

**Resources**

There are a number of resources available to you:

1. For information about networking technology and terminology, see the course text and resources available on the module Web site.
2. For resources about interviewing skills and information about Ace Training, consult the module Web site.
3. Template for requirement specification (see module Web site).

**Facilitator’s Guide: Ace Training: PBL Case 1 – Requirements Analysis**

*Trigger: See Student’s Guide to PBL*

**Schedule**

See Example 1.

**Example 1.**

<table>
<thead>
<tr>
<th>Week</th>
<th>Class activities</th>
<th>Independent study / submissions</th>
</tr>
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</table>
| 1    | Intro to course (plenary lecture)  
Intro to PBL1: Requirements Analysis  
Explore scenario, generate list of questions / information required for interviews next week.  
Create plan | Plan interview, locate resources. |
| 2    | Role play interviews  
View, analyze and evaluate Video interviews (technique and information content)  
Interview Managing Director (20 minutes): receive oral feedback  
Interview Sales Manager (20 minutes): receive oral feedback | Review findings, construct requirements specification. |
| 3    | Sharing/ meeting  
Review progress; identify any other information required / request from tutor.  
Finalize requirement specification  
Review team performance to date | Submit draft requirement specification |
Resources
The Module Web site identifies a long list of suitable resources, linked to the PBL case. There are:

- PBL process documentation in the module guide.
- Notes on interviewing techniques.
- An example template for a Requirements Specification.
- Ace Training’s software and hardware inventory.
- Ace Training’s organization chart.
- Layout of Liverpool office and details of construction.
- Some example forms (invoices, orders) which were once requested by a team. (These are irrelevant.)
- Video of interviews (good and bad technique) with the Accounts department manager.

Background
Following is summary of requirement as an aide memoir for the role plays. Students should work from their own requirements generated at the end of PBL1. Assessment criteria are in the module guide and Web site.
Role play information is included for faculty in Guide for Sales Manager and Guide for Managing Director. Note, there is a conflict: MD does not want internal email, Sales manager and Accounts Manager do. Students need to acknowledge and discuss approach to resolve this. Different client views are realistic.

Requirements
See Example 2.

Week 1

Aim: Today the aim is to ensure they have explored the problem statement and

1. Elected team leader and scribe for PBL1.
2. Analyzed the problems statement and background to produce an outline list of requirements.
Example 2.

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<tr>
<th>Training Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. On-site training for sales, in small groups. Cannot release more than half at a time.</td>
<td>2. General PC training in-house.</td>
</tr>
<tr>
<td>3. Training schedule &amp; plan required.</td>
<td></td>
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</tbody>
</table>

<table>
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<tr>
<th>Installation requirements</th>
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<th>Support requirements</th>
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<tbody>
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<td>2. Maximum down time is half an hour during working day</td>
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</tbody>
</table>

3. Identified a list of information that they will need to find out from interview.
4. Explored the Module Web site for resources.
5. Created a plan of who does what and by when.

This is the first time they have done this you need to make sure:
• You give them lots of encouragement.
• They follow the PBL stages systematically (see module guide).
• Everyone is involved.
• They discuss feelings as well as task (at start or end).
• A plan is produced.
• Times are arranged for interviews next week.

Prompt them towards considering the following without directly giving them the topics. If they cannot get there, they need to investigate what is needed in a network.
Possible questions to ask:

1. What do they need to know about the company? Why?
   - Company processes, communication, decision making, services & product lifecycles, organisational structures, future plans/acquisitions, Customer/partner/vendor relationships

2. What sort of things will they have to specify eventually—does this affect questions they will ask?
   - System software, choice of O/S: what facilities they will require.
   - Applications: what needed?
   - Resilience: what does it mean?
   - Security issues
   - Networking: Cabling compatibility
   - Hardware: to support software. Server (see notes on WebCT under resources), Printers, clients.
   - Training—application
   - Installation: costs, cable runs, time etc.
   - Support—after identified O/S

3. Interviewing—how to do it well?
   They need to think about interviewing.
   - Is the purpose just to get information? (e.g., impress with your professionalism)
   - Who should they interview? (They should identify a number of peoples, for different perspectives. It is limited to two so who would be most appropriate?)
   - What is a good or bad interview?
   - What sort of questions will you ask?—Do you ask the same questions to all clients? (Would you ask the MD what operating system he wants to use, Linux or Windows?) Why not?
   - What structure should there be to the interview?
   - How will you record answers?

I would expect them to plan a meeting to finalize interview questions prior to the interviews. Emphasize that all students must participate in the interview.
Week 2

Aim: Today the aim is for students to practice interview technique, collect useful information and receive formative (oral) feedback on their interview performance.

Video of Accounts Manager Interviews (lecture theatre)
1. Play bad interview and ask students to identify poor technique
2. Play good interview and ask students to identify improvements, in particular the structure (general situation to client problems, to impact of those problems and the value of resolving them)
3. Students can borrow copies of the video to extract information about the Accounts department requirements.

Role Play Interviews
1. Collect role play advice guides for your role as Managing Director or Sales Manager.
2. Use the Interview checklist during interview to determine if they have elicited the appropriate (complete) information, have all taken part, followed a systematic structure, and behaved professionally.
3. Ask them to self assess (briefly) their impression of their performance.
4. Provide oral feedback at end of interview based on your notes.

<table>
<thead>
<tr>
<th>Grading Criteria: Communication</th>
<th>Pass</th>
<th>Good Pass</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2 Collect appropriate information in a structured manner during an interview.</td>
<td>Asks clear questions in logical manner, mostly open questions.</td>
<td>Clear structure to interview, follows up answers with more detailed exploration.</td>
<td>Includes checkpoint summaries, uses suitable interview model.</td>
</tr>
</tbody>
</table>

Week 3

Aim: Today the aim is for students to review and finalize their requirements specification and to conduct a preliminary team reflection on performance.

Resources
• Group work checklist for reflection
During facilitated PBL team meeting:

1. Ask them to explain their requirements and to identify any weaknesses and corresponding actions.
2. Conduct discussion about group performance, using the group work feedback sheet.
3. Team to provide constructive feedback to team leader.
4. Elect leader for next PBL case.
5. Ask them to identify and document points for improvement.
6. Refer them to the assessment criteria for the requirement specification.

<table>
<thead>
<tr>
<th>Grading Criteria:</th>
<th>Pass (threshold)</th>
<th>Good Pass (GP)</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO2 Critically analyse the requirements for a small-scale network.</td>
<td>Key appropriate functional and non-functional requirements correctly identified and in appropriate format.</td>
<td>Most requirements identified correctly and in appropriate format, and prioritised appropriately.</td>
<td>Comprehensive list of functional and non-functional requirements unambiguously and correctly identified and in appropriate format, and prioritised appropriately.</td>
</tr>
</tbody>
</table>

**M21661A Computer Networks: PBL Case 2: Network System Specification**

**Introduction**

This case follows logically from the first. You should now have a good idea about Ace Training’s requirements. These should be documented and form a basis for choosing a system. There are likely to be some minor details that you have not yet pinned down, but you have enough to be able to start identifying a suitable system. For this case you should choose new chairperson and secretary/ scribe.

**Your Problem**

To design and present a fully costed and justified proposal for purchase, implementation and support of new network for Sales tracking, marketing and accounts.
Deliverables for PBL2

1. *Each week at the end of class you must submit a plan* to your tutor, showing learning issues, who they are assigned to and target completion date.

2. In PBL2 you will research and develop a solution to meet these requirements and you will submit a *Draft proposal in week 6* according to the proposal template (see module Web site PBL1 information page). You will receive feedback on this and submit a *Final proposal in Week 11*. You will present this proposal to the board of Ace Training Ltd (15 minute PowerPoint presentation) in Week 12.

3. Individual Research Handout (Week 6).

Assessment Criteria/Weightings

Assessment criteria will be available from the module Web site.

Advice: PBL Process (Steps 1-5)

- Step 1: Make a list of issues that need clarifying. This concerns the outputs from PBL case 1 - is your requirements specification complete, correct and unambiguous? Are you sure?
- Step 2: Define the problem—This is stated for you above.
- Step 3: What do you know about the subject (networks) already? In your team, hold a brainstorming session to identify what you know about network systems that is relevant to Ace Training’s needs. For example, how can hardware be interconnected to form a network? Are there any alternatives? Similarly, what do you know about software (operating systems and applications) that will meet their needs? Are there alternatives here?
- Step 4: Make a systematic list of what you know. Examine the suggestions the group has produced. Organise the connections and categories, value and sort out what is irrelevant.

Identify what you do not know, and what you need to learn or understand to solve the problem. In order to specify a solution, you need to know about the components and alternatives.
Learning

- Step 5: Formulate learning issues (Make a plan)

Important! This is a critical point. It is worth spending some time on this part: if you do not identify clearly constructed research questions as the learning issues, you can waste huge amounts of time.

After identifying what you do not know or what you need to know, you will create a study or work plan that will include all or part of the following steps.

1. Prioritise learning needs
2. Set learning goals and objectives
3. Decide who will do what, and by when. This must be checked by your Tutor before you leave the class. Decide how/when the individual learning will be shared with the rest of the group.

- Step 6: Individual work. You are now ready to complete your study plan. Each member of the group should decide her/his knowledge and learning needs. She/he should organise her/his own way to the new knowledge. Members can work individually or within groups. Again the timescale is tight. You need to clarify your solution to a point that enables you to start building a demonstration system. The class next week will provide you with time for your team meetings, to report back, share and refine any further research you need to do.

End of Class Check

Check and submit a copy of your plan to your Tutor before you leave.

Resources

There are a number of resources available to you:

1. For information about networking technology and terminology, see the course text and resources available on the module Web site.
2. Template for proposal—see module Web site.
Facilitator’s Guide: Ace Training:
PBL Case 2 – System Specification

Trigger

To design and present a fully costed and justified proposal for purchase, implementation and support of new network for Sales tracking, marketing and accounts.

Schedule

<table>
<thead>
<tr>
<th>Week 1 (sem week 4)</th>
<th>Class activities</th>
<th>Independent study / submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intro to PBL2: System Specification</td>
<td>Individual research</td>
</tr>
<tr>
<td></td>
<td>Generate Learning Issues (using outcome from PBL1</td>
<td>Produce individual research handout</td>
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<tr>
<td></td>
<td>requirements)</td>
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<td></td>
<td>Create plan</td>
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<td>Week 2</td>
<td>Sharing/Teach meeting</td>
<td>Submit individual handout</td>
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<td></td>
<td>Review progress, share handouts/ apply to problem,</td>
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<td>Select next learning issues</td>
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<td></td>
<td>Create plan</td>
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<tr>
<td>Week 4</td>
<td>Review proposal &amp; Reflect on progress</td>
<td>Submit Draft proposal</td>
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<tr>
<td></td>
<td>Finalize proposal</td>
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<td>Peer and self assessment</td>
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Resources

The Module Web site identifies a long list of suitable resources, linked to the PBL case. The course book (Introducing Computer Networking) is also appropriate to sort out the fundamental networking choices and knowledge.

Background

Following is summary of requirement as an aide memoir for the tutor. Students should work from their own requirements generated at the end of PBL1. Assessment criteria are in the module guide and Web site.
### Requirements

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### Week 1

**Aim:** Today the aim is to ensure they have generated appropriate learning issues and have created a plan of who does what and by when.

- The requirements are wide ranging; You will need to make sure that they achieve some focus, for example get them to consider what order the problems need solving: IT IS NOT ACCEPTABLE for them to divide work along the lines of Software/ Hardware/ training/ Installation.
- Check that they discuss in some detail the issues around and have generated learning issues, including underpinning theory. Help them to phrase the research questions at this stage. *This is critical for good learning.*

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• **Suggested Learning Issues for week 1 that they may generate are:**

1. *How can computers be connected in a network to share data?* This is the main question at the start. They need to look at alternatives, brainstorm what they know.
   a. Are there different kinds of network?
   b. What are the key characteristics of networks (performance etc)
   c. How can computers be connected together? (Wireless and wired)
   d. What software is needed to connect computers together?
   e. How can a computer direct messages to another computer?

2. What versions of Act! and Sage Accounts will meet Ace’s needs?
   a. What operating systems do they work on?
   b. What alternatives are there?
   c. What hardware requirements do they have?
   d. What network versions are available?

3. What options are there for E-mail connections?
   a. What ISP connection alternatives (ISDN, DSL, Dial up)
   b. What criteria are important for selection

4. How can resilience be achieved?
   a. What sort of threats are there?
   b. How can they be dealt with?

• They should be able to reflect on their experience with the university network and identify possible operating systems to investigate, and alternatives (Novell NetWare, Windows, Linux)

• *Make sure they hand you a copy of the plan before they go, and check it has appropriate detail.*

• *Make sure they know the format of the individual research handout, and stress it must not be cut/paste from Google search!*

Next week we will challenge them on their understanding as they explain it to each other.

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**Week 2**

**Aim:** The teaching and sharing of knowledge and application to problem scenario if sufficiently clear conclusion can be made.
Possible questions to explore knowledge

1. Networking Technologies (Layers ½) Ethernet/Token Ring, Wireless LAN, ATM
   a. How does it work (CSMA/CD, etc.).
   b. What speeds do they operate at?
   c. What is meant by the term bandwidth?
   d. What cabling does it use? (Cat 1-6, Fibre, STP).
   e. What components are used (hub/switch, MAU).
   f. How are frames/cells addressed?
   g. Advantages/disadvantages?
   h. What layers of OSI model?

2. Interconnecting devices: Switches and Hubs
   a. What is the Difference?
   b. Half/Full duplex?
   c. Speeds/Networking technologies.
   d. Cut through vs. Store and forward.
   e. Layer of OSI model.
   f. How do you combine?

3. Connecting to the Internet
   a. What options are available?
   b. What components needed?
   c. What is a router? How does it differ from switch and hub?

4. Operating Systems
   a. Client/Server or Peer to Peer?
   b. Will it run the applications (Sage Line50, Act!, Office apps).
   c. Security domains (able? How?)
   d. Client OS.

5. Resilience
   a. What does it mean? What threats?
   b. How is it achieved Tape backup/ RAID/ Mirror / clustering/ UPS discussions.
Learning Issues

I expect that the exploration of the previous Learning Issues will require further depth and splitting up. I would have expected them to resolve: Peer to peer vs. Client server for this case.

I would expect them to be considering:

1. **Networking:** Ethernet, Token Ring, Wi-fi for the LAN. They can therefore clarify the key info needed about these to decide next week: i.e. relative cost & performance: How do they work? What are the key features? What standards? What data rate? Which would be suitable for Ace Training & Why?

   **Interconnections:** If wired what options for cable types? Compatibility? What options to connect the computes (Hub? Switch? Routers? Network cards?)

2. **What versions of Act! And Sage Accounts will meet Ace’s needs?** They should have identified a number of versions of Sage and Act, and identified a suitable network version of each and the O/S & Hardware requirements. This should be decided.

3. **What Operating Systems are suitable?** Having identified Client/Server (or P2P) and the O/S that Sage Line 50 / Act can run on, they can now investigate the alternatives for the O/S. Linux is out (App S/W will not run on it). Alternatives are Server: NetWare v 6.0, Windows Server 2003. Client Windows XP. Research into relative merits of Netware and Windows. They need to identify the selection criteria: (Cost/Performance/security/resilience)

4. How can resilience be achieved?
   a. They may still be struggling with the options and different effects. Help them to consider threats such as Fire/Flood. Disk failure, Power failure and server hardware failure. They should discover Tape, RAID, Mirroring of servers/Clusters and UPS at some stage. Likely to need help phrasing research questions here.

5. **E-MAIL/ISP:** Should be finished by now: Expect comparison of ISDN and DSL. DSL performance needs questioning (e.g. data rate, contention ratio, ADSL vs. SDSL). ISP email provision and Web space criteria should have been identified.

---

**Week 3**

**Aim:** The teaching and sharing of knowledge and application to problem scenario.
By end of today:

1. Selected network topology, idea of cabling type / wireless, speed
2. Drawn provisional network diagram
3. Decided how email provided
4. Chosen server O/S & clients

**Learning Issues**

1. Security Issues: Internet (Firewall), Virus, O/S security to protect data. How can groups of user’s data be protected from other users?
2. Resilience issues as ongoing.
4. Training: Applications and systems training—what might be needed? Have you enough information to create a training plan?
5. Installation: Costs, cable runs, time etc, installing structured cabling, face plates, patch panels.

Plan should include the synthesis of the draft proposal. Minimum requirements are selection of networking technology, operating systems and application software.

**Week 4**

**Aim:** The teaching and sharing of knowledge and application to problem scenario.

1. Allow half an hour for team review of their proposal.
2. Allow 45 minutes for the sharing of learning
3. Allow half an hour for reflection and review of team performance, identifying group actions for next stage.
M21661A Computer Networks:  
PBL Case 3 – Network Construction

Introduction

This case follows logically from the second. This is where you get your “hands dirty.” You should now have a good idea about the system that you will be proposing for Ace Training. This should be documented and form a basis for constructing a system. There are likely to be some details that you have not yet finalised, but you should have determined which operating systems you will propose.

For this case you should choose new chairperson and secretary/ scribe.

Your Problem

How do you build a demonstration network for Ace training (comprising a Server and 2 clients), using the software you have selected, to demonstrate your solution?

Once you have identified what to do, and how to do it, then you need to construct the network

Deliverables

1. This week: A plan of how you intend to use the lab time in the next 3 weeks, i.e. what you will install and configure in a particular week and the software, hardware you need from the technician at each lab. You are unlikely to be able to stick precisely to this, but you will be able to reflect on how well you estimated time required.

2. In PBL3 you will research and construct a small network to meet these requirements. You will demonstrate this to your tutor on week 11 of the Semester (see schedule on Web site for actual date). You must show a plan of what you are going to demonstrate to your tutor. This should show access to shared network folders and applications with appropriate security [e.g. Sales people should not be able to use Sage Accounts] Evidence of printing from applications should ideally be provided also.
3. You will present the final proposal to the board of Ace Training Ltd in Week 12. Your presentation should be approximately 15 minutes, all members of the team should be involved and a PowerPoint slide show should be used. The presentation should summarise the proposal. In your presentation, you should include the following:
   a. Introduce your company to build confidence in your company’s ability to meet the customer’s needs.
   b. Identify the needs.
   c. Explain your solution.
   d. Explain the benefits of the solution, and in particular why you should be chosen.

   The presentation should be business focussed (on the customer’s needs) rather than very technical. Do not discuss the details of faceplates used for cable connections! (As one team did a couple of years ago.)

4. You will submit the final proposal in week 12. Proposal template and checklist are available from the Web site

5. Individual Reflection & peer assessment (Week 12). The individual reflection should clearly demonstrate your part in the network construction, and should evaluate the approach you have taken in this PBL. You should identify your learning and action points for improvement in the future.

Assessment Criteria/Weightings

Assessment criteria will be available from the module Web site.

Advice: Applying the PBL Process (Steps 1-4)

- Step 1: Make a list of issues that need clarifying. What do you intend to demonstrate in the network? What will the network comprise (hardware & software)? Make a list of the components you will need from the technician.
- Step 2: Define the problem. What is the problem you are solving in this PBL case? Are there any sub-problems that need solving before the larger problem can be solved?
- Step 3: What do you know about this already? In your team, hold a brainstorming session to identify what you know about building a network. What activities are needed?
• Step 4: Make a systematic inventory. Examine the suggestions the group has produced. Organise the connections and categories, value and sort out what is irrelevant.

_Important_

* Identify what you do not know, and what you need to learn or understand to solve the problem.*

**Learning**

• Step 5: Formulate learning objectives. After identifying what you do not know or what you need to know, you will create a study or work plan that will include all or part of the following steps.
  1. Prioritise learning needs
  2. Decide _who will do what, and by when_. Decide how / when the individual learning will be shared with the rest of the group.

• Step 6: Individual work. You are now ready to complete your study plan. The seminar time next week will provide you with time for your team meetings, to report back, share and start constructing the network. You are also likely to need to refine any further research you need to do.

_NB It is essential that you have a plan of what practical tasks you will be undertaking, and have read up about them BEFORE you start installing software / hardware. Everyone in the group must be able to explain what you are doing, why, and what you expect to happen before you carry out any practical work._

You should allow sufficient time to install and re-install the software. Do not expect it to go perfectly the first time around. You often learn more by repeating something!

**Resources**

Before you install software you must research information to perform the task successfully. This means finding installation notes for:

1. The operating system. The module Web site has some notes for partitioning hard disks, installing Windows2003 Server, setting up an Active
Directory Domain, Adding Users, security groups and client computers to the domain, configuring a file and print server. There are also lots of Web sites that will provide this information. Find suitable notes and print them out. Go through them in advance to identify any confusing terms or procedures and resolve them before you start. Suitable sites for Windows 2003 are:


These links are available from the Web site (page labelled Network Theory Links, etc.)

2. Installing the application software. The module Web site has installation and configuration notes for Sage Line50 and Act! You can also obtain more detail from the Sage Line50 installation manual that you can borrow.

3. You are setting up a small network which will need IP addresses. Use the private addresses: 192.168.0.1, 192.168.0.2, 192.168.0.3 with subnet mask 255.255.255.0. You will also need to invent a name for your network domain.

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**Facilitator’s Guide: Ace Training:**

**PBL Case 3 – System Construction**

**Trigger**

How do you build a demonstration network for Ace training (comprising a Server and 2 clients), using the software you have selected, to demonstrate your solution?
Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Class activities</th>
<th>Independent study / submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Intro to PBL3: System Construction</td>
<td>Submit Plan</td>
</tr>
<tr>
<td></td>
<td>Generate Learning Issues</td>
<td>Individual research</td>
</tr>
<tr>
<td></td>
<td>Create implementation plan</td>
<td>Produce individual research handout</td>
</tr>
<tr>
<td></td>
<td>Week 2</td>
<td>Submit Plan</td>
</tr>
<tr>
<td>Week 2</td>
<td>Sharing/Teach meeting/ Lab implementation</td>
<td>Individual research</td>
</tr>
<tr>
<td></td>
<td>Obtain resources, construct hardware and start software installation</td>
<td>Produce individual research handout</td>
</tr>
<tr>
<td></td>
<td>Monitor progress against plan</td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>Sharing/Teach meeting/ Lab implementation</td>
<td>Submit individual handout</td>
</tr>
<tr>
<td></td>
<td>Obtain resources, construct hardware and start software installation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monitor progress against plan</td>
<td></td>
</tr>
<tr>
<td>Week 4</td>
<td>Demonstrate network</td>
<td>Submit final team proposal</td>
</tr>
<tr>
<td>Week 5</td>
<td>Presentation</td>
<td>Submit Reflection and Peer assessment</td>
</tr>
<tr>
<td></td>
<td>Peer assessment</td>
<td></td>
</tr>
</tbody>
</table>

Resources

The Module Web site identifies a long list of suitable resources, linked to the PBL case. There are installation and configuration notes for MS Windows 2003 server, Domains, users/groups, shared folders, drive mappings, Sage Line 50 and Act! There are also notes on establishing network connectivity.

Week 1

Aim: Today the aim is to ensure they have generated appropriate learning issues and have created a plan of who does what and by when.

- Suggested Learning Issues for week 1 that they may generate are:
  1. How do you configure the network so that the computers can send messages to each other?
     a. This should raise issues of addressing, in particular IP and Subnet masks. If not, they will encounter this when investigating the network setup.
  2. How do you install Microsoft Windows 2003 Server® and XP® client
  3. How do you add users?
  4. How do you configure security to restrict access to certain folders?
  5. How do you install Sage Line50 and Act! so that all network users share the same database?
6. How do you configure Printers?
• They should create a plan for the next four weeks, which they will monitor. Make sure they hand you a copy of the plan before they go, and check it has appropriate detail.

**Week 2 and Week 3**

**Aim:** The sharing of knowledge, construction of the network and monitoring progress against the plan.

Preparation of a plan for the demonstration, related to the client requirements.

**Week 4**

**Aim:** Demonstration

1. Refuse to start until you have seen their demonstration plan.
2. Allow them to complete the demonstration.
3. Ask the team questions, particularly related to the sharing of folders, drive mappings and security groups.
4. Teams complete peer assessment from template
5. By next week, complete reflective report as per the template on the Web site.

<table>
<thead>
<tr>
<th>Grading Criteria</th>
<th>Pass</th>
<th>Good Pass (GP)</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO4</td>
<td>Demonstration shows evidence of planning, all team involved, Shared / restricted access, User login and applications demonstrated. Questions answered showing some correct knowledge. Likely to need significant prompting.</td>
<td>As Pass and evidence of thorough organisation of the demonstration, relates to client requirements. Questions answered correctly, may be some prompting.</td>
<td>As GP and all aspects of demo systematically related to client requirements. Questions answered confidently, correctly and comprehensively</td>
</tr>
</tbody>
</table>

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**Week 5**

**Aim:** Presentation

<table>
<thead>
<tr>
<th>1. Presentation skill (individual)</th>
<th>2. Presentation content (team)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation within 5 minutes of agreed time &amp; Logical structure. Clear speech, some eye contact. Co-ordinates with other team members. PowerPoint uses appropriate text and graphics.</td>
<td>As Pass and clear introductions / summary / signposting. Answers questions knowledgeably. Explains slides.</td>
</tr>
<tr>
<td>As GP and confident, enthusiastic, persuasive, does not read from a script, relates to clients</td>
<td>As Pass and clearly links features/benefits of solution with client needs and problems.</td>
</tr>
</tbody>
</table>

Presentation is consistent with, and relates to report. Presentation is balanced and discusses key points.