Chapter 3: Requirements Determination

# Teaching Tips and Strategies *(from Alan Dennis)*

I usually spend two to three classes on this chapter. The idea for this chapter came from my consulting work but was driven by my bad experiences in teaching SA&D. Years ago, when I was first teaching SA&D, I used to teach the section on analysis by starting with the information gathering techniques, such as interviewing, questionnaires, JAD, etc. One year, a student floored me by stating, “I understand how to structure interviews, write questions, etc., but I don’t know *what* to ask.” It was then that I realized that by blindly following the SA&D textbook I was using that I had neglected to help the students understand the big picture: how to link the information gathering (e.g., interviews) to the analysis of the information gathered to the business value the new information system would create (and perhaps more importantly from the students viewpoint, how to figure what to ask about). Obviously, the chain goes the other way: set the business goal first, define the analysis strategy, then figure out what information to gather.

First, this chapter defines functional and non-functional business requirements. I have found that when students are told to gather requirements, they don't really know what that means. Their first instinct is to equate requirements to what the system should look like or how it technically needs to be built, rather than the basic business needs that the system needs to meet. So, I find that this content needs to be introduced with a solid understanding of "business requirements."

It is important to understand that the business need drives the IS project, not the other way around. The business sponsor first sets the project goal and the project gets its marching orders. This chapter presents three different analysis strategies that can flow from the project goal: BPA, BPI, and BPR. Yes, we know the term BPR is passe at this point, but the concept still remains. Information systems implement change, and that change can be minor automation (leaving the business intact but changing how it is done), moderate improvement (in the *business*), or radical change.

It is also important for the students to understand the overall process of analysis is somewhat consistent (as-is modeling, identifying improvements, to-be modeling), but the emphasis changes depending upon whether the goal is minor or major change. One of the most contentious issues in industry – at least in my experience – has to do with as-is modeling. Many experts and firms don’t do as-is modeling. They simply regard it as a waste of time. When I teach, I talk about as-is modeling, but I do *not* require the students to turn in an as-is model for their projects. I do not do this because of philosophical reasons, but because of time constraints; I don't think they have time to develop "grading-quality" as-is process and data models as well as a "grading-quality" to-be process and data models.

The various analysis techniques in this section came out of my consulting practice. Some I've invented, some I've adapted from other techniques, some I've "borrowed." I've used them and they all "work" when used appropriately. In my opinion, the three most powerful techniques, and the ones I use most often and the ones I encourage my students to use are *root cause analysis* (for just about every project), *informal benchmarking* (when you can find some organization that is doing something similar to the project you're working on) and *activity elimination* (for stimulating radical change).

I often lecture about the techniques and then ask the students to take 10 minutes to use each of the techniques to generate improvement ideas for a problem (e.g., campus parking, course registration, finding a place to live). I break the group into small teams and have each of them use a different technique. Then when we reconvene and start presenting the ideas, the class can see how the different techniques lead to rather different ideas for improvement.

I usually spend one to two classes on information gathering. I focus on interviewing, because that is what most of my students end up using, but I do cover the other techniques as well, but not with as much emphasis. The technique that I use the most often in my consulting work -- and I believe is the most commonly used by consultants in industry -- is the JAD session. I probably should have my students learn more about JAD and actually practice some, but I've been reluctant to encourage them to use JAD in their projects because it is more challenging than the other techniques (but I suppose it is possible to screw up an interview as badly as a JAD session).

Much of the material in this section can be dull, because it *seems* to be common sense. Unfortunately, common sense is less common than we would like. I try to spice up my lectures with short breaks for the students to practice interviewing or writing questionnaires, so they can see that it is not as easy as it sounds as they sit there and take notes (the Your Turn exercises are a good start).

Finally, it is important for the students to understand the trade-offs among the different techniques and to realize that most projects use a variety of different techniques to gather different information. You start with the analysis plan, and then identify the best set of techniques to gather the information you need for each analysis.

# War Stories *(from Alan Dennis)*

**A Failure Down Under**

Several years ago, I was the lead consultant on a BPR project for the Australian Army. The goal was to reengineer the processes and organizational structure of the Army headquarters in Sydney responsible for the command of all land forces. There were two major problems facing the headquarters. First, many processes were inter-functional, requiring the involvement of several areas within the headquarters, so there was considerable inefficiency and frustration to accomplish even the simplest of tasks. Second, each of the areas had the ability to issue orders to units under the headquarters’ command, so it was not uncommon for units to receive conflicting orders unknowingly issued by the different areas in the headquarters, which was not only embarrassing but potentially costly.

The project was directed by a major (promoted to lieutenant colonel during the project) and began under the sponsorship of the headquarters chief-of-staff (a one-star general). The project began with a very quick development of an as-is process model for the headquarters. The model was built by nine small teams of middle managers (5-8 majors and lt. colonels) who spent one day building their part of the overall model. There was considerable resistance among the middle managers to becoming involved in the BPR process, and when the sponsor was transferred soon after the project began, it languished for six months. Then the commanding general of the headquarters (a two-star general) became interested in the project as the fundamental problems within the command became clear after several highly noticeable incidents.

The project was restarted with a concentrated push over a two-month period in which the management team worked almost full time on the project. The general made it clear to the management team and all members of the headquarters staff that he wanted radical change and that the improvement plan should come from the middle managers in the headquarters who were most familiar with the processes and structure. The management team created ten teams of middle managers, this time organized around ten cross-functional processes (e.g., ensure preparedness, manage resources, conduct operations), rather than on functional lines as for the as-is model. Both BPI and BPR analyses were used. There was still some initial reluctance among the middle managers, but this gradually changed into strong support as the scope and nature of the changes developed by the teams began to emerge.

The proposed changes eliminated three functions and reorganized the headquarters structure around five major processes. Once the scope of the change became clear to the commanding general, he issued orders that prevented any radical change. The project died.

My mistake was in assuming that the general wanted what he said: radical change. The general had been expecting "radical change" in the form of the group simply recommending a system very similar to that used in the U.S. Army. It turns out that the colonel who was supposed to be keeping the general informed as the project proceeded didn't keep him informed. If some of the initial improvement ideas had been communicated to the general before the to-be models were developed, then the general might have bought into the change, or simply redirected it at that point before the time and effort was wasted on the to-be models.

**BPR in the Hotel Industry**

Many years ago I worked on a BPR project for a major hotel chain (you'd recognize the name if I told you). One of the techniques we used was proxy benchmarking. The hotel industry is one which has a high cost to develop an inventory (i.e., the hotel rooms) but a very low marginal cost to sell them (i.e., how much does it cost to clean your room?). It also has a time dependent inventory; if a room is not rented today, you can't sell it twice tomorrow. After a brief discussion, the group of hotel executives picked several industries with similar structures: airlines, professional baseball, rock concerts, newspapers, plus a few others just for fun. After a 30-minute brainstorming session (using a group support system) they had generated several pages of ideas, including some mentioned in the textbook: variable pricing by how full the hotel is, a frequent stayer program, a "season ticket" concept for selling to corporations. Many of these ideas are now standard in the hotel industry.

They also used the breaking assumptions technique. We spent 10 minutes identifying several obvious assumptions for how to run a good hotel and then 30 minutes brainstorming on how to break them. For example:

Assumption: Guests want clean rooms.

Breaks: Have the guests clean their own rooms -- i.e., a condo-style hotel

Sell dirty rooms -- i.e., start a cheap "fleabag" hotel (well, not really, but

the idea ultimately led to a new no-frills cheaper hotel concept.

Assumption: Guests must pay for their room

Breaks: Give away rooms -- i.e., since empty rooms cost virtually nothing, give

them away in a frequent stayer program

**The Importance of Understanding the Client's Jargon**

In the mid 1980's, small businesses had begun to embrace PC's at an ever more rapid pace and I saw an opportunity to earn a few dollars on the side as a PC consultant. One particular customer was a Mining consultancy with main offices in the U.K. They had hired me to help establish e-mail connectivity with their main office using the AT&T EasyLink service. There was some sort of compatibility issue between the e-mail software that they wanted to use and their CPM-based PC. After digging into the software spec, I determined that the executable code needed to be patched to point to the correct comm port for their particular model.

After making the changes, I asked the clients to come in so that we could run a test. After entering the account information, I saw the PC begin to act strangely. Seeing that something was wrong, I muttered: "Uh, oh... The program is about to blow up." The two people with me immediately zoomed out of the room. When I remained in my seat, they motioned frantically from the door for me to join them and so I walked over. "What's wrong?" I asked. "Well, you said that it was going to blow up!" one of them replied. It suddenly dawned on me that someone in the mining business would be very familiar with "explosive" situations and would take them very seriously. I might as well have yelled: "Fire the hole!"

**Collecting Information, Maybe**

I was doing my first Information System Plan for a major consulting company. Naturally, the first task was to interview the key users. Well, I had the task of interviewing the Vice President that was most interested in the project. When I arrived for the interview she had already prepared a several page document that summarized her thoughts on what the new system should include. So, for an hour, we discussed her requirements and I added a few questions that were not answered by her materials. After the interview, I wrote a summary of the interview. Since she had already documented most of her requirements, I focused my interview summary on the other topics we discussed. Proud of my work, I then sent the document to all the other VP's.

Well, a day later, Peggy was furious and met with me and threatened to cancel the project. She was angry because none of her materials were included in the summary and she felt that my summary made it look like she barely had any original thoughts about the system. She was also ticked because she didn't see the summary before it went out. Everything would have been ok, if I had just attached her notes to my summary and run it by her first. After a very tense 90 minute meeting, things calmed down. The project went on to be successful and Peggy and I are friends to this day.

**Interviewing: Gauntlet or Sales Job?**

There's definitely an art to locating and bringing in good people. Many managers don't realize that it's a two-way street and that they should be selling the job just as hard as the applicant is selling themselves. One common mistake is the way in which the technical interview is structured.

I once had this incredibly sharp guy named Don working for me who was very nice personally, but fairly opinionated when it came to the proper way of implementing a particular solution. Technically, he rated a 9 on a scale of 10 and I thought it a good idea to let him screen candidates and separate the wheat from the chaff.

One day, Don walked into a conference room with this fellow to conduct an interview. Ten minutes later, the fellow was seen literally running through the office at about 10 mph, making a beeline for the elevator. When I asked Don what had happened, he pointed out that the fellow seemed to have a very fuzzy grasp of object-oriented concepts. After a couple minutes of grilling and being corrected several times, he had jumped out of his seat, exclaimed: "Obviously, I'm not smart enough to work here!" and bolted out of the room.

Regardless of whether this candidate's final self-assessment was actually true, the manager needs to ensure a comfortable experience for candidates if they want to be successful in attracting the best. No one wants to be interviewed in a setting like an old cop movie, with bright lights shining in their face while they are hammered with questions.

While this applies to a job interview, I've seen junior analysts take the same mentality in interviewing users. They see their role as one of extracting information from a "user," not a person and go about in the same way you would extract cat food from a can with an impatient pet waiting. Remember, part of the goal in the interview process is to sell the system you're building.

**Gathering Requirements in JAD Sessions: The Magic Moment**

In every JAD session, there is a magic moment when the participants start working as a team, when they realize that they are on a common mission and have a common goal. They begin to feel secure enough with each other to passionately disagree, have fun, confront each other, and sometimes even agree on issues they once considered quitting over.

We facilitated one session for a client where it was common for people to have worked for 30 years or more. The customer service representatives were referred to as the girls on the help line, and not a single male worked in the customer service department. Behind the scenes, the girls (really women in their 40s and 50s that I insisted be called women) were the only ones who dealt with merchants, installers, salespeople, and three levels of management, not to mention customers, every day.

At first, these women were reluctant to speak. They were shy, not very sure of themselves, not sure what would happen if they spoke out. So, I wasn't surprised when they started whispering to each other. Even though one of the rules of the session is no side-bar conversations, I sensed that the women were building a voice through their whispers, so I ignored it. Instead, I walked over to a woman named Sarah and asked her what really goes on in the customer service department.

By the end of the week, these women were pounding their fists on the desks, saying, “This is not the way it happens!” They were role playing, showing the rest of the group what really happens, and telling us how they thought things should work. Finally, management woke up and said, “Hey, these women really do know what goes on out there.”

# War Stories *(from Barbara Wixom)*

**One of my favorite BPR stories is Southwest Airlines...**

Years ago, Southwest realized that a lot of money is wasted in the airline industry from flights being on the ground. Basically, the more time in the air, the more money an airline can make. But, everyone in the industry was doing a bad job with turning around aircrafts.

Instead of looking at best practices in their own industry (there were none), Southwest thought of other industries where turnaround time was important - and they came up with auto racing. At the Indy 500, a car can enter and leave a pit stop in a matter of seconds. So, Southwest used the auto racing industry as a benchmark and tried to see how their own processes could be improved by auto racing processes.

The result: Southwest can now turn a plane around in an average of 15 minutes. This is the best practice now for airlines - and it blows all of the competitors away...

# Answer to Your Turn 3-1: Identifying Requirements

1. Functional business requirements: 2, 4, 6, 8. Student responses may include any example that represents a request for system information or business process.
2. Nonfunctional business requirements: 1, 3, 5, 7, 9, 10. Student responses may include any example that represents a behavioral property that the system must have (e.g., operational, performance, security, cultural, and political).

# Answer to Your Turn 3-2: Interview Practice

Student responses will vary depending upon how the interviews are conducted, and what was observed. This exercise can be a great ice breaker for group work assigned throughout the semester. It makes the students interact with each other.

# Answer to Your Turn 3-3: JAD Practice

Student responses will vary depending upon how the JAD session was conducted, and what was observed. Utilize the same groups from Your Turn 3-2. Observe the differences in interaction between student groups.

# Answer to Your Turn 3-4: Questionnaire Practice

Student responses will vary depending upon how their experience with both the questionnaire completed and the questionnaire created.

# Answer to Your Turn 3-5: Observation Practice

Student responses will vary depending upon the results of their observations.

# Concepts in Action 3-A: What Can Happen if you Ignore Nonfunctional Requirements

Nonfunctional requirements are important. Often, to the client they may be more important than the functional ones. Not taking these requirements into account can be construed by the client as not listening to what they really desire.

# Concepts in Action 3-B: Selecting the Wrong People

Interview schedule:

First and second line managers – determine how processes are managed

People the managers supervise – determine how processes work

Actual users of the system – determine what work is actually done, how they feel about the system, how it might be improved, etc.

# Concepts in Action 3-C: The Reluctant Interviewee

1. Being the single person who understands the system is a powerful position to be in. The interviewee might be reluctant to share that information as that may diminish their importance to the organization. It might also have been an instance of where the interviewee just did not feel comfortable with the interviewer.
2. After the first interview, the interviewer may already have felt that the interview did not ‘go well’. At that point, there were a couple of options; the interviewer could have submitted a list of questions for the interviewee to answer and send back, or the interviewer could have provided an alternate interviewer in the hopes that he or she might have been able to build a rapport with the interviewee.

# Concepts in Action 3-D: Publix Credit Card Forms

1. The credit card form, while containing all pertinent information, is not being used as designed. In this case employees are constantly modifying the form to accommodate the flow of information among employees, often with errors being introduced.
2. The form should be modified so that the text which displays the total is larger.

# Concepts in Action 3-E: A Process in Need of Improvement

The discussion of time and money spent having meetings is interesting. The instructor could discuss issues right on their own campus that would highlight the reason why companies tend to not measure or want to know what the real cost of a meeting(s) is.

# Concepts in Action 3-F: IBM Credit

Students might list Activity-Based Costing, Informal Benchmarking and Duration Analysis. Conducting a duration analysis would illustrate problem areas in this process, and a process integration analysis would certainly help in reducing the number of steps required to complete the process. One of the major problems in this scenario is that too many departments are involved. Any student response that includes reducing the number of departments, or the number of steps required, which would decrease the time involved, would be right on track.

# Solutions to End of Chapter Questions

1. *What is the meaning of analysis? What is the purpose of the analysis phase of the SDLC?*

The term analysis can be defined as: breaking a whole into its parts with the intent of understanding the parts’ nature, function, and interrelationships. In the context of the SDLC, the outputs of the planning phase (the system request, feasibility study, and project plan), outline the business goals for the new system, define the project’s scope, assess project feasibility, and provide the initial work plan. These planning phase deliverables are the key inputs into the analysis phase.

1. *What are the key elements of a system proposal?*

Key elements of a System Proposal include: detailed requirements definition statement, use cases, process models, data models, a revised feasibility analysis and a work plan.

1. *A system development project may be approached in one of two ways: as a single, monolithic project in which all requirements are considered at once or as a series of smaller projects focusing on smaller sets of requirements. Which approach seems to be more successful? Why do you suppose this is true?*

One of the challenges in using the traditional Waterfall approach to a project is the need to consider all of the project requirements at once (a monolithic project). This can be very difficult to identify and manage an enormous set of requirements up front and is one of the reasons why Waterfall is not used much in its traditional form. Typically, breaking a large project into smaller manageable projects has a higher rate of success. Breaking it down into smaller component projects allows for ease of understanding of functionality and processes.

1. *Distinguish between business, user, and functional requirements.*

During a systems development project, requirements will be created that describe what the business needs; these are referred to as business requirements. Requirements that are created that describe what the user needs are called user requirements, and those requirements that describe what the software should do are functional requirements.

1. *Explain what is meant by a functional requirement. What are two types of functional requirements? Give two examples of each.*

The system’s functional requirements evolve from understanding how the new system can support user needs. A functional requirement relates directly to a process the system should perform as a part of supporting a user task and/or information it should provide as the user is performing a task. Student examples will vary.

1. *Explain what is meant by a nonfunctional requirement. What are the primary types of nonfunctional requirements? Give two examples of each. What role do nonfunctional requirements play in the project overall?*

A nonfunctional requirement refers to behavioral properties that the system must exhibit. Types of nonfunctional requirements include: Operational, Performance, Security, and Cultural and Political. The IIBA defines this group of requirements as “the quality attributes, design, and implementation constraints, and external interfaces which a product must have.” Student examples will vary.

1. *What is the value of producing a requirements definition and having the project sponsor and key users review and approve it?*

A requirements definition effectively describes the scope of the project. Project sponsors and key users need to review the requirements definition to ensure that it encompasses the key features of the new system. At this point, any discrepancies and misunderstandings can be addressed.

1. *What are the three basic steps of the analysis process? Is each step performed in every project? Why or why not?*

[1] Understand the as-is system - study the existing system and processes and understand the strengths and weaknesses.

[2] Identify improvement opportunities - look for the specific things that need to change.

[3] Define requirements for the new system (the to-be system) – create one or more target conceptualizations for the to-be system, including an outline of features and models of its basic design.

The first step is sometimes skipped or done in a limited manner. This happens when no current system exists, if the existing system and processes are irrelevant to the future system, or if the project team is using a RAD or agile development methodology in which the as-is system is not emphasized.

1. *Discuss the appropriate way to set up and conduct interviews to elicit requirements.*

The most commonly used requirement elicitation technique is interviews. People at different levels of the organization will have different viewpoints on the system, so it is important to include both management and staff to gain high-level and low-level perspectives.

When the interview process is conducted the first goal is to build rapport with the interviewee so that he or she trusts you and is willing to tell you the whole truth. The interviewer needs to be unbiased and independent seeker of information. The interview should start with an explanation of why the interviewee and interviewer are there and why they were chosen.

It is critical that all information be accurately recorded. The best approach is to take careful notes, write down everything the interviewee says, regardless of relevancy. The information may prove to be relevant at a later time, remember, be unbiased.

As the interview draws to a close make sure that there is time available for the interviewee to ask questions or provide information that they think is important but perhaps had not been covered in the interview.

The five major steps to conducting interviews are:

1. Selecting interviewees - determine who should be interviewed, why they should be interviewed (what contribution will they make to the project?), and develop a schedule for conducting the interviews.
2. Design the interview questions - depending on who is being interviewed and the type of information desired, the analyst needs to design the interview session with the appropriate structure and question type.
3. Prepare for the interview - review related material; review interview plan; review interview questions and plan for any anticipated problem areas; inform interviewee about interview agenda.
4. Conduct the interview - establish rapport with the interviewee; explain purpose of interview; ask interview questions; record information from interviewee.
5. Prepare post-interview follow-up report - summarize the interview in an interview report.
6. *Give an example of a closed-ended question, an open-ended question, and a probing question. When would each type question be used?*

Student examples will vary.

Closed-ended questions are used when the interviewer is looking for specific, precise information. Open-ended questions are used to gather a broader, rich information set. Open-ended questions can help the interviewer learn why things are the way they are, and also give the interviewee the chance to add ideas or issues that the interviewer did not anticipate. Probing questions are used whenever the interviewer is not satisfied with his/her understanding of the interviewee’s answer, and needs more explanation before moving on to another topic.

1. *“Interviews should always be conducted as structured interviews.” Do you agree with this statement? Why or why not?*

No one interview type will be appropriate for every interview and each type of interview has a purpose. Structured interviews are interviews that are planned to gather very specific, detailed information. These interviews use more closed-ended questions that zero in on specific information and facts. These interviews will be conducted later in the information eliciting process, when the analyst has learned enough about the business process in order to formulate more specific, detailed questions.

Unstructured interviews are interviews that are planned to include broad, far-ranging questions. Often open-ended questions are used to elicit information. These interviews are most likely to be used early in the information eliciting process, when few details are known, and the analyst is trying to understand the basic business process and the As-Is system.

1. *Discuss the considerations that should be made when determining who to include in interviews and/or JAD sessions.*

First, identify the information that is needed, and then identify the people who can provide that information. Second, consider the political ramifications of including or excluding people. All key stakeholders must be included in the information gathering process.

1. *Is the primary purpose of requirements determination to discover facts or to discover opinions? Explain your answer.*

Both are valuable. An opinion is a statement about an issue or situation that may or may not be supported by fact. If it is stated “Most of our collections are on-time,” this is an opinion that can be confirmed or denied by doing an actual measurement of on-time collections. This information is factual, and may provide the basis for the opinion expressed. Alternatively, the opinion may be a misstatement of actual fact, and may suggest an area where there is misunderstanding of the true situation.

1. *Describe the five major steps in conducting JAD sessions.*

The five major steps to conducting JAD sessions are:

1. Selecting participants - determine who should be included and why they should be included (what contribution will they make to the project?).
2. Design the JAD session - plan the activities and techniques that will be incorporated into the JAD session in order to accomplish the session goals.
3. Prepare for the JAD session - review related material; review JAD plan; inform participants about the process and the contributions they’ll be expected to make.
4. Conduct the JAD session - establish rapport with the participants; define session ground rules; follow session plan and have facilitator conduct various activities and techniques; record information.
5. Prepare post-JAD follow-up report - summarize the session in a post-JAD report.
6. *Describe the primary roles involved in JAD sessions. What is the major contribution made by the person(s) fulfilling each role?*

The facilitator is responsible for conducting the session. He/she is generally knowledgeable about IS issues, JAD facilitation, and group behavior management.

The facilitator is responsible for guiding the group through the planned activities on the JAD agenda. The facilitator must keep the group on track and try to prevent it from digressing in unproductive directions. The facilitator also helps foster communication among the group members and assists them through the analysis techniques that are being used. Finally, the facilitator records the group’s ideas on a public display area, organizes the information, and assists the group in working with the information.

One or two scribesassist the facilitator by recording notes, making copies, and so on. Often, the scribes will use computers and CASE tools to record information as the JAD session proceeds. .

1. *Discuss the reasons why question design for questionnaires is so difficult.*

Questions on questionnaires need to be very carefully stated in order to avoid misunderstanding by the recipient. If a question during an interview or a JAD session is misunderstood, the misunderstanding can be immediately detected and the question clarified. A poorly worded question on a questionnaire may confuse the recipient, causing him/her to answer with incorrect information, or may antagonize the recipient, causing him/her to forego completing the questionnaire.

1. *Why is document analysis useful? What insights into the organization can it provide?*

Document analysis focuses on existing documentation of the current system, forms and reports that are a part of the current system, plus any personal forms, reports, or files that have been developed informally by the end users. By studying this material the analysts can gain insight into the existing system, how it is used, and possibly also aspects of the system that are not being used.

1. *Outline suggestions to make observation a useful, reliable requirements elicitation technique.*
2. Keep a low profile
3. Do not interrupt employees at work
4. Do not influence those being observed
5. Keep in mind that what you observe may not be normal day-to-day behavior
6. Gather clues from working environment
7. *Describe a strategy for using the various requirements elicitation techniques is a project.*

The different requirements elicitation techniques all have strengths and weaknesses, and the astute analyst will use a combination of techniques in any project. The analyst should select the techniques based on the type of requirements being sought, the breadth and depth of information needed, the degree to information needs to be integrated, the need for user involvement, and the cost of the technique. Interviews and JAD sessions are the most productive information gathering methods; however, these techniques require the most skilled analysts to conduct.

1. *Discuss problem analysis as an analysis strategy. What are the strengths and limitations of this technique?*

The most straightforward (and possibly most used) strategy for analysis is problem analysis. The biggest strength of problem analysis is that the users and managers are personally involved in the process of identifying problems with the as-is system and then to offer suggestions on how to solve the problems for the to-be system. A common limitation of this strategy is that it tends to solve problems rather than capitalize on opportunities. Improvements tend to be small but do increase system efficiencies. On the negative side they seldom increase business value.

1. *Discuss root cause analysis as an analysis strategy. What are the strengths and limitations of this technique?*

Root cause analysis focuses on problems first rather than solutions. A list of problems with the current system is generated. The list is prioritized and then rather than look for solutions the analyst generates a list of all possible root causes for the problem. Ultimately the process reveals the true root cause or causes of the problem and the right solution can be designed. Root cause analysis allows the analysts to not jump to conclusions about a solution to a problem without gaining a deep understanding of what the root problem is. A limitation of this strategy is that the organization has to allow sufficient time for the process to work well.

1. *Compare and contrast duration analysis and activity-based costing. What role do these activities play as analysis strategies?*

Duration analysis requires a detailed examination of the amount of time it takes to perform each process in the as-is system, while activity-based analysis examines the cost of each major process or step in the as-is system. The analysts identify the costs associated with each of the basic functional steps or processes, identify the most costly processes, and focus their improvement eff orts on them.

1. *How can informal benchmarking contribute to requirements determination?*

Benchmarking in general refers to studying how other organizations perform a business process in order to learn how your organization can do something better. Informal benchmarking consists of managers and analysts observing other organizations by taking a customer perspective with the business processes. In many cases, the business studied may be a known leader in the industry or simply a related firm.

1. *Compare and contrast outcome analysis, technology analysis, and activity elimination. What general contribution do these strategies play in determining requirements?*

Outcome analysis focuses on understanding the fundamental outcomes that provide value to customers. Technology analysis starts by having the analysts and managers develop a list of important and interesting technologies. Activity elimination is just that, the analysts and managers work together to identify how the organization could eliminate each and every activity in the business process.

There is common ground among these strategies, as a new technology could eliminate an activity and increase business value to the customer. These strategies focus on users (outcome analysis), functional needs (technology analysis), and what the business needs (activity elimination).

# Solutions to End of Chapter Exercises

1. *Go to a web site of your choice that sells products (a retail site). Develop a list of functional and nonfunctional requirements that the web site provides. Now, go to a news-oriented site and develop a similar list. How do your two lists compare? What are the key differences between requirements for the two sites?*

Answers will vary by student and by sites selected, but some of the normal functional requirements would be:

Examples of Functional Requirements include:

1. Search - enable user to find item(s) based on variety of item characteristics
2. Browse - enable user to look through items
3. Shop - enable user to select and purchase items
4. Comment - enable user to submit his/her comments on items and read other users' comments on items
5. Personalize - enable site to remember user's preferences based on previous use of the site and orders placed
6. Registries - enable user to participate in registry (e.g., wedding, baby); enable users to search registries
7. Wish Lists - enable user to create and maintain a wish list of desired items; enable users to search a person's wish list for gift ideas.

And, examples of Nonfunctional Requirements may include:

1. Operational - the system should work on any web browser
2. Performance - the system should be available 24/7/365.
3. Security - the system enables registered customers to review their own accounts
4. Cultural - the system exists in versions tailored to global users, e.g., French, Japanese, German, etc.

Comparing and contrasting the two types of web sites with the two types of requirements will provide a visual learning experience to the student.

1. *Pretend that you are going to build a new system that automates or improves the interview process for the career services department of your school. Develop a requirements definition for the new system. Include both functional and nonfunctional system requirements. Pretend you will release the system in three different versions. Prioritize the requirements accordingly.*

Functional Requirements

Version 1:

* 1. Career Services personnel post each company's interview schedule on the system.
  2. Students may reserve one and only one interview slot per company.
  3. Students may change their interview reservation until the day before the interview.
  4. Confirmation of interview reservation is sent to student by email 24 hours prior to interview.

Version 2:

1. If an interview schedule is full, student may register on a waiting list.
2. If openings appear on an interview schedule, students on waiting list are notified by email.

Version 3:

1. Students may register their specific qualifications and when a company seeking those qualifications opens an interview schedule, the student is notified by email.

Nonfunctional Requirements (applied to all three versions)

Performance:

1. System is accessible via a web browser
2. System integrates with the resume-posting system and the job listings system

Operational:

1. System is real-time; interview reservations are immediately reflected in the interview schedules
2. System is available 24 hours a day whenever university is in session.

Security:

1. Only students registered with Career Services have access to system
2. Students can choose to be identified by name on the schedule or by some other identifier

Cultural and Political:

1. Students can make only two changes to their interview reservation per company
2. If a student fails to appear for a scheduled interview, he/she will be dropped from any other scheduled interviews they may have.
3. *Describe in very general terms the as-is business process for registering for classes at your university. Collaborate with another student in your class and evaluate the process using problem analysis and root cause analysis. Based on your work, list some example improvements that you identified.*

Current Process:

* Student logs on to registration system
* Student submits request for course number and section number
* If seat is available, student is registered for that course.
* If seat is not available, message displays that that section of the course is full.
* Student displays current schedule
* Student confirms current schedule
* Student prints current schedule
* Student logs off the registration system

Improvements will differ by student. Problem analysis will be easier for the student (consumer) to enumerate than the root cause of such problems will be. This would make for an interesting class discussion where bringing the online class registration manager could be quite insightful for all.

1. *Describe in very general terms the as-is business process for applying for admission at your university. Collaborate with another student in your class and evaluate the process using informal benchmarking. Based on your work, list some example improvements that you identified.*

Current Process:

* Student visits university web site
* Student submits completed online application for admission
* Email feedback is sent by the university acknowledging application
* The application process is completed by admissions and student is notified of result

This technique involves studying how other universities' admission process works in order to learn how our system might be improved. The analysts on the team or the representatives from the Admission’s Office who are on the team could perform this technique. An example of an improvement that might be suggested is to have the system automatically ask the student if he/she would like to register for classes rather than travel to the campus.

1. *Describe in very general terms the as-is business process for registering for classes at your university. Collaborate with another student in your class and evaluate the process using activity elimination. Based on your work, list examples that you identified.*

Current Process:

* Student logs on to registration system
* Student submits request for course number and section number
* If seat is available, student is registered for that course.
* If seat is not available, message displays that that section of the course is full.
* Student displays current schedule
* Student confirms current schedule
* Student prints current schedule
* Student logs off the registration system

This technique involves studying how we could eliminate activities from the registration process. The representatives from the Registrar's Office and representatives from the academic units who are on the team should perform this technique during a JAD session. An example of a radical change that could be explored is the elimination of prerequisite checking for a course. Everyone assumes this is a necessary activity, but if prerequisites are truly meaningful, then students should know not to enroll in courses for which they are not qualified.

1. *Suppose that your university is having a dramatic increase in enrollment and is having difficulty finding enough seats in courses for students so they can take courses required for graduation. Perform a technology analysis to identify new ways to help students complete their studies and graduate.*

Technology analysis involves considering a set of technologies and identifying ways each one could be used in the business process. Some technologies that might be considered here are:

* Development of online classes – many universities now offer complete degrees using an online environment.
* Web-based video streaming - students could attend lectures without being physically in the classroom.
* Extranets - develop an extranet with other higher education institutions in the area that links registration systems. If a student cannot obtain a seat in a required course at their home institution, the system searches the other registration systems to find a seat in a comparable course at another institution. Tuition credits and transfer credits are automatically arranged by the system.

1. *Suppose you are the analyst charged with developing a new system for the university bookstore with which students can order books online and have them delivered to their dorms and off-campus housing. What requirements-gathering techniques will you use? Describe in detail how you would apply the techniques.*

This situation seems ideal for a JAD session. It will be important to have managers from the bookstore and students together on the team so that each can listen to the others' point of view. Student expectations will need to be moderated with constraints faced by the bookstore managers. A JAD session will help build compromise and consensus and will help create a viable set of business requirements. Since there is no existing system to study in this case, the BPR technique of outcome analysis could be used to direct the group's focus on the outcomes that provide value to the bookstore and its customers.

1. *Suppose you are the analyst charged with developing a new system to help senior managers make better strategic decisions. What requirements-gathering techniques will you use? Describe in detail how you would apply the techniques.*

It would be useful to get the senior managers together in a JAD session to identify ways in which they require support from the new system for strategic decision-making. However, given that most senior managers are very busy and are often out of the office, scheduling a JAD session may be impractical. Consequently, one-on-one interviews are probably the most useful technique to employ. The interviews should focus on gathering facts about the types of decision made and the information required for these decisions.

1. *Find a partner and interview each other about what tasks you/they did in the last job held (full-time, part-time, past or current). If you haven't worked before, then assume your job is being a student. Before you do this, develop a brief interview plan. After your partner interviews you, identify the type of interview, interview approach, and types of questions used.*

Student responses will vary.

1. *Find a group of students and run a 60-minute JAD session on improving alumni relations at your university. Develop a brief JAD plan, select two techniques that will help identify improvements, and then develop an agenda. Conduct the session using the agenda, and write your post-session report.*

Student responses will vary.

1. *Find a questionnaire on the Web that has been created to capture customer information. Describe the purpose of the survey, the way questions are worded, and how the questions have been organized. How can it be improved? How will the responses be analyzed?*

Student responses will vary.

1. *Develop a questionnaire that will help gather information regarding processes at a popular restaurant, or the college cafeteria (e.g., ordering, customer service). Give the questionnaire to 10 - 15 students, analyze the responses, and write a brief report that describes the results.*

Student responses will vary.

1. *Contact the career services department at your university and find all the pertinent documents designed to help students find permanent and/or part-time jobs. Analyze the documents and write a brief report.*

Student responses will vary.

# Answers to Textbook Minicases

1. Problem analysis and benchmarking would be feasible strategies to employ in this situation. This is a problem with a rather narrow scope…the As-Is system needs to be improved, but there is no broadening of the information that needs to be integrated into this system. Problem analysis would permit the analyst to identify potential solutions that the users can identify, then identify the problems those solutions are addressing, and investigate the root causes of the problems. Analysts could also employ informal benchmarking, and investigate systems used by other similar organizations for ideas for this system’s requirements.
2. If Brian has done a quality job in his initial time estimates, he should not submit to pressure from his project sponsor to reduce the time frame. It is common for project sponsors and users to not understand the reason for the time allocated to analysis. When talking to Joe, emphasize how important it is to perform the analysis phase so that requirements are understood and that no important requirements are missed. Also stress how much more costly it will be to add missed requirements at a later time compared to including them from the very beginning. If Joe is adamant and he has a real need to accelerate the project schedule, suggest that time boxing be used to narrow the initial project scope, and postpone some features to a later version of the system.
3. Barry has made so many mistakes that it’s hard to know where to begin. Note, however, that these mistakes are very common to the novice, and so should be emphasized to the class. Some of the problem areas include:
4. Did not arrange for his visit in advance. The store manager was surprised and obviously needed to verify who he was. Wasted time and got off on the wrong foot with the store manager.
5. Did not consider the timing of his visit. Observation should include not only normal operation periods, but also peak periods. Scope should also encompass all special routines such as store opening and closing.
6. Was obtrusive and interfered with the staff performing their functions.
7. Scope of analysis was too limited. Only looked at the creation of sandwiches. Many other managerial tasks in support of delivering the product were omitted from his scope. Barry didn’t learn much about store management from his visit.
8. Barry’s has inadvertently undermined his own position on the project team. The store manager has no confidence in him after this experience, and he is going to inform the project sponsor of Barry’s ineptitude. Rather than being praised, Barry may find himself back on a programming team after this.
9. The following set of questions were developed to administer to the customers of a food catering business. Put yourself in the position of a customer who has ordered food from this catering business at least one time in the past. You have just received this survey in an e-mail from the catering company. The e-mail contains a link that takes you to a Web-based survey process (such as Google Forms or SurveyMonkey).

* Three questions use a 0-10 scale without stating that 10 is good. Plus, a 1-5 scale is much more common.
* Survey asks for company name which may reduce the response rate.
* Catering for 10 people should take much less time than for 100 people so without additional information, this questions would not provide any useful information.
* Biggest problem question is open-ended and that would make analyzing that question more difficult than would be a list of items to rate.
* Features for the new system is also open ended and would be hard to analyze.
* The question about convenience/speed/accuracy is a double-barrowed question. Most likely, customers would value all of these.
* How often does not specify over what time period.

1. Anne did a couple of things right: she pre-tested the questionnaire and she gave the participants a definite due date. These steps are important in conducting questionnaires. Since they obviously weren’t sufficient, there may have been some other things she could have tried.
2. A note of explanation about the purpose of the questionnaire and how the information will be used could have been valuable. Since the questionnaire was seeking both positive and negative comments on the current system, Anne needed to assure the clerks of their anonymity (this was not mentioned in the case).
3. Stating that the questionnaire was being sent to all clerks could have both helped and hindered the response rate. If a clerk knows that the questionnaire was sent to everyone, then they may not feel ‘singled out,’ and may be more willing to participate. On the other hand, knowing that everyone got a questionnaire may be interpreted to mean that any particular individual’s lack of response will not be noticed.
4. A reward or inducement for responding can help. Perhaps Anne could have provided an award to the sales location with the highest response rate (a picnic lunch or pizza party for everyone is popular). This has the advantage of adding a little competitive spirit and can improve overall participation. Individual inducements such as coupons or gift certificates can also be useful.
5. It might have been possible for the sales supervisors at each location to administer the questionnaires to all of their clerks simultaneously at a regular staff meeting. Anne could have attended and been available to answer all their questions about how the information will be used. The clerks would have the visible support of their supervisors as well to motivate their cooperation.
6. The sales supervisors at each location could have required completion of the questionnaires and monitored compliance by the clerks. Managerial coercion may be needed in some situations. However, Anne would have to be cautious in interpreting the survey results in this case, because the questionnaires are not necessarily being completed anonymously (limiting the truthfulness of the responses), or the respondents may just put down anything in order to be done with the requirement.
7. Central City Community College recently authorized a system development project focused on the college’s Career Center. A job posting capability is in the existing system, but there is no way for students to upload resumes or schedule interviews with recruiters. The Career Center director wants to add several new features to make the system more useful and valuable to both students and recruiters. The following Business Needs were drawn from the System Request document.

* Business requirements include the ability to upload resumes and perhaps cover letters along with students being able to schedule recruiting interviews.
* User requirements include recruiters searching resumes and posting interview schedules.
* Functional requirements include a place to upload resumes and interview schedules, a process for scheduling interviews, and a way of notifying students of upcoming interviews.

# Supplemental Minicases

1. Tom and Jerry are systems analysts who have been assigned to a new systems development project. They are meeting to plan the requirements analysis phase of the project. Tom believes that problem analysis is the best strategy for the project, while Jerry supports using duration analysis.
2. Under what circumstances is problem analysis the most preferred analysis strategy?

*Answer: Problem analysis is an appropriate strategy to use when the goal of the project is primarily to enhance the efficiency of the As-Is system. Projects that have a limited need to integrate information from throughout the organization also may be addressed with the problem analysis strategy. If this project’s scope is rather narrowly defined (primarily, the As-Is system), then problem analysis may be selected. If financial resources are limited, problem analysis may be chosen because it is a low cost strategy.*

1. Under what circumstances is duration analysis the most preferred analysis strategy?

*Answer: Duration analysis is an appropriate strategy to use when the goal of the project is to make moderate improvements to the As-Is system. When the team perceives that one or more of the business processes needs substantial improvement, duration analysis can be useful in identifying the areas that should be targeted.*

1. Do these two techniques complement each other in any way? Could be both be used in a project? Explain.

*Answer: It is certainly possible to employ both strategies in a project. Duration analysis should be useful in identifying those business processes that are in need of substantial modification. Those processes can then be targeted by the team as needing significant rework. Other business processes may be identified that just need to be made more efficient. Problem analysis can be used for those processes to generate users’ ideas for improvements. Tom and Jerry should carefully evaluate the Systems Request and talk with the project sponsor to determine the primary objectives of the project. Based on this information, they can recommend one or more analysis strategies to the project sponsor.*

1. The Randall Company is a mid-sized trucking and distribution business that has been experiencing problems with its sales entry and customer support system. The system uses rather old technology, plus it incorporates a number of complex procedures that are cumbersome for the users to complete.

Management has been aware of the need for this system renovation for some time, and has finally committed to investigate a new system. The IS department head has designated Jenny Mills as project manager for the project.

After several conversations with the key managers and users in the sales and support department, Jenny feels some concern about the direction of the project. On the one hand, she has heard numerous strong user complaints that the system should “just be thrown out!”, suggesting a BPR type of project. On the other hand, the managers have repeatedly expressed concern about getting the new system developed quickly without too much expense. Jenny has also been told by management not to “shake things up too much.” In short, management seems to be taking a very cautious approach to this project.

Jenny’s own opinion is that this situation is crying out for a BPR project. The system is antiquated and awkward, and a fresh approach with up-to-date technology could really transform the business. Do you think Jenny should move ahead with her analysis planning using a BPR strategy? Develop a persuasive argument to support your position.

*Answer: It is tempting in a situation like this to go for the BPR analysis strategy. The business value that could be achieved with a successful BPR project is extremely alluring. Unfortunately, the high failure rate associated with these projects (estimated by some to be as high as 70%) suggests that all factors must be in place to achieve a successful result. Since BPR projects involve high cost, radical change, and high risk, this situation does NOT appear to be good BPR candidate. It does not appear that there is sufficient organizational support for this type of project (especially by management). Jenny should not stick her neck out and try to accomplish too much for this project. She cannot be successful unless she can identify a vocal project champion who can pave a political path to overall management support and enthusiasm for a BPR project.*

1. Mark Van Dorn, president of Van Dorn Sub-Oceanic Exploration, Inc., has authorized his Director of Information Services to begin a major project that will redesign the engineering support workstations used by his staff of design engineers. Mark has been concerned for a number of months that his firm was losing market competitiveness because of inadequate computer support for his engineering staff.

Richard, his IS Director, is eager to begin the project. He and his staff have many ideas on how new hardware, software, and networking technologies can support the work of the design engineers. He is very concerned, however, that the engineers participate in defining their needs for this new system, so that the system will truly be valuable to them and so that they are more likely to use its capabilities.

Richard and Mark have discussed the process for including the engineers in the analysis process, and Richard has recommended a technique called Joint Application Development (JAD). One of his IS staff members used JAD in a previous job, and is an experienced JAD facilitator. Richard explained how JAD involves the users and managers in a series of intensive group workshops that will guide the group through the process of identifying needs for the new system, and formulating the design of the new system. Mark was impressed with the JAD concept, and realized it would certainly help accomplish his objective of involving his engineers in the development process.

After reflecting on his conversation with Richard, Mark has identified a couple of concerns, however. One is the amount of time his engineers would have to commit to the JAD sessions. Can his firm withstand the lost productivity of the core of his engineering staff for a number of days? A second, and perhaps more important concern, is the fact that Mark knows the personalities of his engineers better than Richard. The engineering staff tends to break down into two groups. One group consists of seasoned ‘old-timers’ who are accustomed to traditional ways of doing engineering. Several of this group are tough, irascible, ex-nuclear submariner types who have domineering personalities. The other group is younger, right out of college, who are eager to utilize computer tools and technologies they were exposed to during their college training. A few of this group are outspoken, but most defer to the older engineers who have far more experience and seniority. Mark has serious concerns about getting these engineers to work together on a JAD project team.

One evening, shortly after his discussion with Richard, Mark called his daughter, Julia, who is a IS consultant in another city. Mark laid out for her the need for the project, his goal of heavily involving the engineering staff, and his concerns about the strong personalities clashing and the shy personalities getting ignored during the JAD sessions. Julia’s response was immediate. “You need to use a new way of performing JAD, called e-JAD. This will take care of most of your specific concerns. My firm has already performed several e-JAD consulting engagements, and we’re pleased with it. I think it will work for you.”

Explain what Julia means by e-JAD. Why does she think it may be a solution to this problem? Are there any disadvantages in using e-JAD?

*Answer: Despite the presence of a trained facilitator, JAD groups are still subject to some of the problems common to decision making groups. Dominant personalities may overshadow or intimidate others in the group. Differences in status may make participants reluctant to speak up with controversial ideas. Shy individuals may find it difficult to contribute. These problems can reduce the effectiveness of the JAD processes.*

*e-JAD (electronic JAD) uses groupware tools to mitigate some of these group problems. Specifically, in the idea-generation activities of the group, the participants use groupware software to enter their ideas anonymously and share them with the entire group. The anonymity encourages everyone to share their thoughts without fear, and enables shy people to ‘speak up.’ Tools are used to enable the group to rank and vote on priorities, enabling everyone to have an equal voice in decisions. Typically, discussion is tightly controlled during e-JAD so that the influence of domineering individuals is minimized.*

*e-JAD can substantially reduce the time involved in JAD sessions. However, there will be the additional expense associated with obtaining the groupware needed for the e-JAD sessions. An experienced e-JAD facilitator will also be necessary. This is probably a good time to bring in a consulting firm like Julia’s to lead this process. The additional cost will most likely be justified by a far more productive JAD, better information gained from the engineers, and a more satisfying experience by all who are involved.*

1. Angela is a systems analyst for the Fair Grain Baking and Confectionery Company. Angela was thrilled to be assigned to a new project that will develop a new production and operations control system for the company’s four production facilities. Angela was brought on the project team just as the information gathering process was beginning. Her first assignment was to conduct several interviews with key personnel from the production areas of two of the facilities.

Larry is a production supervisor at the Lakeland plant. Larry has been in his position for sixteen years. He is a short, burly man with a no-nonsense attitude. Angela is a little intimidated by him before she even begins the interview but she vows not to let her nervousness show. Larry arrives at the conference room for the interview right on time. He sits opposite from Angela, leans back in his chair, and crosses his arms across his chest. As Angela works through the interview agenda, she finds that his every answer is brief, gruff, and to the point. Try as she may, Angela cannot get him to loosen up or elaborate on any of his answers. After only ten minutes, Angela has exhausted her list of questions and cannot think of anything else to say. Awkwardly, she thanks Larry for his time and concludes the interview.

The next morning, Angela is scheduled to meet with Mary, a production crew chief. Mary has been with the company for eight years, and worked her way up from assistant line operator to her present crew chief position. As Mary enters the conference room (ten minutes early), Angela notices that she seems quite nervous and has trouble making eye contact. Mary perches on the edge of her chair throughout the interview. Inwardly, Angela smiles with relief. Mary will be nowhere near as difficult to handle as Larry was. As the interview begins, Mary anxiously answers every question. Gradually, Angela notices that Mary is straining to give her whatever answer she appears to be asking for. If Angela asks about a potential problem, Mary assures her there is a problem. If Angela asks for a process description, Mary provides a detailed description until Angela seems satisfied. It slowly dawns on Angela that, in a sincere effort to please, Mary will tell her whatever Mary thinks she wants to hear.

Angela has encountered two different but equally problematic behaviors in these two interviews. Larry has responded to her questions with the barest minimum of answers. Mary has attempted to anticipate what Angela wants to hear, and strove to please with her every answer. In both cases, Angela has far less information than she needs to fulfill her objectives. How should she have handled Larry? How should she have handled Mary?

*Answer: Larry’s behavior may suggest resentment or antagonism toward the project. His early behavior of arriving right on time suggests he doesn’t want to spend any more time on this than he must. His body language of leaning back and crossing his arms suggests a defensive attitude. His terse answers may just be his way of communicating, but could also indicate his unwillingness to contribute to the project. If Angela had recognized these signs early, she could have taken steps to set him at ease. Perhaps she could try to build a little rapport at the outset of the interview (sports, weather, hobbies, etc.) to break the ice. If his answers are still very terse, she could try to explain how important his ideas are to the success of the project. Maybe she could get him to cooperate if he realized the value of his experience and ideas. If she still is encountering resistance, Angela could try to confront it head on, and just ask Larry what his concerns and reservations are about the project. Perhaps he is concerned about being able to understand the new system, or about potential job loss in his plant due to the new system. If Angela understands the source of his resentment, she may be able to allay his fears and get him on her side. If she can’t, she will have to look for an alternative source to elaborate on the interview topics.*

*Mary’s behavior reflects her uncertainly about what is expected of her in the project. Although she is trying to cooperate, the value of her information is low because its accuracy is questionable. Angela needs to know how things really are. Once Angela began to sense that Mary was creating answers designed to please her, she should have taken steps to help Mary better understand her role in the project. Angela should have explained the reason why she needs to talk to people who have Mary’s perspective, and emphasize the valuable insights that people on the front lines can provide to the project team. This may help Mary become more confident in the role she is in. However, if Angela feels that Mary is continuing to provide answers primarily to please her, she should be prepared to verify everything she learned from Mary using alternate sources.*

# Experiential Exercises

1. Purpose: to experience a group process using the root cause analysis technique.

Form the class into groups of four or five students. Have each student group react to the following question: What would you like to see in a new student registration process here at the university? Each group develops a list of the features they would like to have in a revised registration process.

Have the groups exchange lists so that every group is working on another group’s list of student registration process features. Work backwards from the list, and identify the problem(s) that is being solved by each feature that is requested on the list. Prioritize these problems in the order of their importance and urgency. Prepare a new list of the prioritized problems that are being addressed by the listed features.

Have the groups exchange lists again. Using the list of problems, generate a list of possible root causes of the two most significant problems. Identify the assumptions that underlie each of the potential root causes of the problem.

As a class, have each group identify and discuss the highest priority problem on their list, and present and explain their list of possible root causes of that problem. Have the class discuss whether the group correctly identified the true root cause of the problem.

1. Purpose: to experience the analysis technique of informal benchmarking.

It is fairly easy to enable students to gain an appreciation for the analysis technique of informal benchmarking. Most colleges and universities use their web-sites as a significant aspect of new student recruiting. Have students assume the role of a prospective college student evaluating potential schools to attend for an IS degree. Visit the web sites of several schools, including a peer institution to your school, perhaps an in-state rival institution, and a premier institution. Have the students compile a list of the strengths and weaknesses of each site visited. Have them compare the sites visited with your own institution’s web site. What ideas can the students generate to improve/enhance your institution’s web site?

1. Purpose: to learn about the BPR strategy directly from a project participant.

Many universities have joined the BPR bandwagon. It is possible that there have been on-campus BPR projects at your own institution. If this is the case, it is an ideal opportunity to bring one or more visitors to class to discuss their BPR experiences with the students. Since the user perspective is valuable here, it is well to try and get a user as well as an IS participant to visit class. The purpose of the visit is to learn more about the disruptions that occur as a part of BPR projects, and the amount of uncertainty and risk associated with these projects. No one can really communicate this as well as someone who has been in the trenches. Have the students prepared to try and identify the analysis techniques that were employed by the team and how successful those techniques were. How successful was the project overall? What factors can be identified that contributed to the project’s success (or failure).

1. Purpose: to experience the analysis technique of duration analysis.

Purchasing textbooks from the university bookstore is a process that at most institutions is filled with inefficiencies. Because it is a process that every student has experienced, it is ideal to use as a subject of a duration analysis.

Have students outline the activities performed during the process of buying their textbooks for a semester. Require them to get very specific and detailed in their determination of the process steps and activities. Then, determine an overall class average time that it takes to purchase textbooks at your bookstore at the start of a semester (each student’s experience will be different, so a class average may be the best way to determine a total time for the process figure).

Working in pairs, have the students measure the expected time requirements to perform each of the activities in the book buying process. Of course, time spent waiting for service, waiting in lines, etc., is omitted. Tally up the time spent in each activity. Have each student team share their results with the class. Measurement differences should be discussed, because students may have defined the activities differently and therefore computed different times (an important lesson to learn about developing common understanding of terms and definitions!).

Comparing the total time of the overall process with the sum of the process activity times should reveal dramatic inefficiencies in the book buying process. Discuss with the class some alternatives to traditional book buying (advance ordering of books, web-based booksellers, web-based course materials, etc.).

1. Purpose: to experience the activity of developing good interview agendas.

Have students assume that they are on the project team that will be developing a new student registration system for your institution. Form the class into groups of four students. Within each team, two students will work together to develop an interview agenda to be used when interviewing the Registrar regarding the new system. The other two students will work together to develop an interview agenda to be used when interviewing students regarding the new system. The two subgroups within each team should not consult with each other during the development of their interview agendas.

The content of the students’ interview agenda should include:

1. goals for the interview
2. outline of the information that the interviewee should be able to provide
3. questions to be asked during in the interview in the specific sequence that will be followed

After the subgroups have completed their agendas, the team should meet together. The subgroups should exchange interview agendas, and then discuss the agenda with each other. The focus of their discussions should be on how successful the interview plans were and how effective the interview questions were at eliciting the desired information. Teams should help each other work on developing effective questions that are phrased appropriately for the interviewee. Differences between interview structures and questions that are appropriate for students versus those that are appropriate for the Registrar should be stressed so that students begin to appreciate the need to consider their audience in the interview preparations.

1. Purpose: to practice interviewing through role playing.

This exercise is modification of Experiential Exercise #1 above. In this version, rather than having the students exchange and discuss their interview agendas with their team members, they will actually practice the interview through role playing.

After the subgroups have completed their agendas, the team should meet together. Each student will perform a mock interview with one of the students from the other subgroup. The interviewer should follow the planned agenda, and the observing students should critique how successful the interview structure and the interview questions were. Following the mock interviews, the student team should discuss together the results of the mock interview process. The focus of their discussions should be on how successful the interview plans were and how effective the interview questions were at eliciting the desired information. Were the interviewers prepared for everything that happened during the interview? Did the interviewee try to take the interview in an unexpected direction? Was the interviewer satisfied with what was learned through the interview? Why or why not?

1. Purpose: to experience the activity of designing questionnaires.

Have students assume that they are on the project team that will be developing a new student registration system for your institution. Form the class into groups of four students. Students will pair up within the teams of four. Each pair of students will develop a questionnaire that will be distributed throughout campus to collect students’ ideas for the new registration system. Each pair of students will work independently from the other.

When the questionnaires are complete, the subgroups will meet together and exchange questionnaires. Each pair of students will evaluate the other pair’s questionnaire regarding these issues:

1. What were the apparent goals of the questionnaire designers (based on the questions themselves)?
2. Assess the quality of the questions - were they understandable or misleading; was there any confusion; did the questions elicit the response the designer was looking for?
3. Will the questions and answers provide the content needed to fulfill the designer’s apparent goals?
4. After administering this questionnaire to its intended audience, what will be learned by the project team?

This feedback and discussion with fellow students should help students gain an appreciation for the difficulty of developing good questionnaires that provide meaningful information.

1. Purpose: to practice the information gathering technique of observation.

Students will be required to find two different types of processes to observe. One process should be primarily a physical task or process, such as making lunch, tying a tie, washing the car, or working out at the gym. The other process should be primarily mental (performed at a desk), such as studying, writing a program, paying bills, or balancing a checkbook.

The student should get permission to observe, and then unobtrusively observe the process. There should not be any discussion between the observer and the observed party. The student should then prepare a written description of the observed process. Any steps that are unclear or not understood should be noted.

After the student has written up the description, s/he should meet with the observed party and discuss the areas that were unclear. Chances are good that there will be some parts of the physical activity that were not clear and need explanation. Chances are very good that there will be much of the ‘mental’ activity that was not obvious through observation. This should demonstrate situations where observation is not very effective. The observer and observed party should also discuss how the presence of an observer influenced the observed party’s behavior.