

# Introduction to Problem-Based Learning



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Information Technology Institute  
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Facilitated by  
Mark A. Serva and George H. Watson



Institute for Transforming  
Undergraduate Education



University of Delaware

Handouts for Day 2

## STAGE 2

Dan's investigation had uncovered a number of potential causes for the company's customer service problems:

- The productivity and performance of call center employees was a concern. Even though the average number of calls handled per hour had remained consistent over the past year, the increase in overall call volume had increased the average hold time well beyond the company standard of fifteen minutes.
- Portal commonly hired older workers who had retired to the Phoenix area. Increased competition for workers—as well as spiraling healthcare costs—had raised costs considerably.
- The company's twelve call centers were at maximum capacity. Although adding more centers was an option, the high cost of operations made further expansion in the Phoenix area unlikely.
- The pressure to add more call center employees had forced the company to lower its hiring standards. As a result, performance metrics—e.g., whether or not the representative provided the correct information, number of transfers to other departments—were eroding.

Portal Systems' main advantage had been its website, which allowed customers to configure and order their systems. Recently, however, the company's two main competitors had made improvements in their online ordering capabilities to the point where they were almost as advanced as Portal.

Dan also realized that these competitors had a significant cost advantage over Portal. Both had closed their call centers in the United States and had hired call center providers in India. Their customer service cost structure was much lower than Portal's, making it difficult for Portal to match their profit margins.

To gain insight into offshoring, Dan met with a representative from Extend, a call center provider headquartered in Bangalore, India. Extend had been founded only two years ago, but the company had rapidly grown to three call centers that housed thousands of employees. Dan's inquiries convinced him that Extend had an excellent reputation and was well-managed. Extend was confident that it could dramatically improve Portal's service levels. There would be a considerable initial expense to cover the hiring, conversion, and shutdown of Portal's domestic centers. After that, however, the annual cost would decline by at least thirty percent.

Given its potential advantages, Dan knew he must consider offshoring in his recommendations to the Executive Vice President.



## **FOCUS QUESTIONS**

Your will be assigned to one of the following stakeholder groups:

- Portal Employee
- Portal Executive Management
- Phoenix community leader
- Representative from Extend
- Representative from the Indian government

Discuss the following focus questions with the other members of your new stakeholder group. In your new role, you are acting as an advocate for the assigned stakeholder group. Be sure to consider the following focus questions:

1. Why is Portal's decision to offshore its call centers important to your stakeholder group?
2. How does Portal's level of customer service affect your stakeholder group?
3. What information do you need to find in order to be an effective advocate for your stakeholder group? Where do you think you can find the information?

Use a flip chart to record your ideas. Summarize your concerns on a separate sheet for presentation to the rest of the class.



### **STAGE 3**

Return to your original group. Your group will assist Dan by formulating the final recommendations for Amy Smith. Your recommendations should be in the form of a 10 minute PowerPoint Presentation and should answer the following focus questions:

- Should Portal Systems offshore its customer service function?
- If so, how much? How can it complete the transition as painlessly as possible? What are the future implications of offshoring its call centers?
- If not, what are Portal Systems alternatives to offshoring? What are the advantages and disadvantages?
- How can Portal Systems balance the concerns of its stakeholders?



# Writing Effective Problem-Based Materials



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## Important Considerations in Writing Problems

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- Level of course and maturity of students
- Time frame
- Staging
- Availability and access to learning resources
- Use of prompting questions
- Role of problem in accomplishing course objectives



## Types of Learning Objectives

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**Content-oriented:** subject specific

- Basic knowledge and understanding of specific concepts, techniques, etc. in the discipline

**Process-oriented:** global skills

- Effective communication: oral and written
- Acquiring and evaluating information
- Working effectively with others
- Higher order, critical thinking



## What Factors Influence Decisions About Problems?

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**Who is the problem writer?**

- discipline
- control issues
- level of investment

**What is the course?**

- students (number and level)
- sequencing of course/problems
- time/structure of class



## Step One: Identify Learning Objectives

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**Think of a learning objective in your course .**

**How do you usually address this learning objective? What kind of problem or activity do you usually assign?**

- Typical end-of-chapter problem?
- A reading?
- Other?

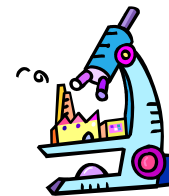


## Solving Management Problems

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Companies are increasingly using monitoring to encourage employee productivity:

- What are the issues?
- How should the monitoring of employees be managed?





## Textbook Problem/Concept



“The secretarial pool is part of the group assigned to Doug. The pool has produced very low quality work for the past several months. Doug has access to the passwords for each of the pool members’ computer accounts. He instructs the supervisor to go into each hard drive after hours and obtain a sample document to check for quality control.”

If you were the supervisor, what would you do? Is this ethical?”

Pearlson and Saunders (2006), *Managing and Using Information Systems*, John Wiley & Sons, p. 211.



## Step Two: Identify Real-World Context

**Name a realistic application of the concept.**

**Outline a scenario.**

**Ideas:**

- Add context
- Be a storyteller
- Add motivation, require students to go beyond rote learning, do research.
- Include decision-making: what would YOU do as a manager?
- Recognize that decision-making is not easy. Make the situation ambiguous



## A Real Life Scenario: MarTech

- Based on my wife’s experiences
- “You can’t make this stuff up”
- Information given gradually throughout problem



## Sources and Strategies for Writing Problems

Newspaper articles, news events

Popular press in the discipline

Make up a story – based on content objectives

Adapt a case to a problem

Research papers

Other?



## Step Three: Draft the problem

**Outline the problem.**

**What will be on the first page?**

**Suggestions:**

- Good PBL problem has multi-page, multi-stage construction - leave students guessing!
- Not all information given in chapter or text - students look for resources.
- Challenge students to come to consensus, reach conclusions, and make judgments, deal with ambiguity



## MarTech – Monitoring Concerns

**Stage 1:** Judging if a problem exists. What information does Marsha need before she continues?

**Stage 2:** More information given. “Surprise” (and open-ended) conclusion. Students need to make further judgment calls

**Stage 3:** What are the implications of terminating Steve? How do we handle Alan’s and Marsha’s actions?



## Activities Related to MarTech

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- Groups summarize each stage before moving to next.
- Final stage written up by group with complete analysis.



## Feedback To Presenters

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What did you like most about the problem?

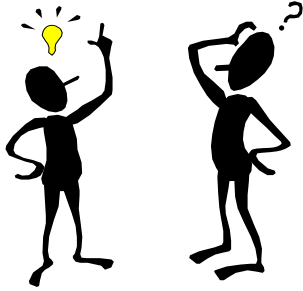
Does it challenge students to think and do research?

Is the problem appropriate for the proposed course?

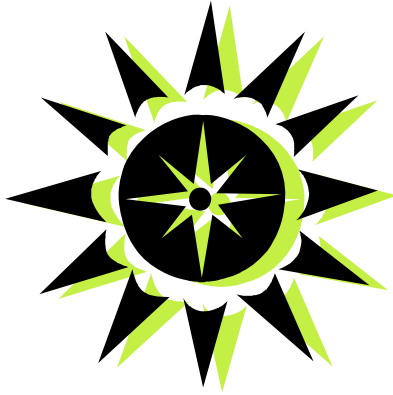


## Reflections and Questions

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# MarTech Consulting: An Awakening Problem?



## Stage 1:

MarTech provides IT expertise to companies in the greater Delaware area. Employees work in companies across the United States.

To ensure that a client has continuous network service, MarTech provides overnight network supervision. A consultant reports to the site around 8pm and works until the retailer's shift reports the next morning. The consultant's primary responsibility is to prevent server outages. If an outage does occur, the consultant's job is to minimize server downtime. Server outages can result from

hacker attacks or hardware failure, but the most common source is a spike in customer visits to the website. A vigilant consultant can transfer the load to other servers if he notices that the main server is being overly taxed.

Server outages were occurring at an unusually high rate at one MarTech customer, which sells athletic equipment through its website. Server outages are especially troublesome for online retailers: if the server is down, the retailer's store is effectively "closed." Dennis, the retailer's IT Director, voiced his concern to Marsha, MarTech's Director of Managed Services. Dennis pointed out that the time to restore network services was unacceptable and below the contracted standard of fifteen minutes. He suspected that Steve, the overnight consultant, was sleeping instead of monitoring the systems. He had no proof, but the typical outage length had been 45 minutes since Steve had taken over from the previous MarTech employee. One especially expensive incident had lasted two hours.

Marsha called Steve at work that evening to discuss the situation. Steve acknowledged that restoring the network was taking more time than usual. He said he had informed Dennis that the outages may have been caused by a faulty network router, which he had just replaced. To help satisfy the customer, he had performed the job at no charge. In his opinion, the recent marketing blitz by the retailer—combined with the faulty router—had caused the problem. He assured her that he was taking all possible steps to ensure network service was restored in a timely manner.

Marsha waited a few weeks to follow up on the problem. Dennis acknowledged that the outages had subsided somewhat, but were still occurring at 2-3 per week. Outages were especially common on Mondays—an especially high-traffic day for the company. He argued that the average time to restore network service was still too long, however (35 minutes). Dennis demanded that something be done, or his company would drop MarTech.

## Discussion Questions

1. (Work individually). Assume you are Marsha. What information do you know? What information do you need to know? How can you get this information?
2. (Work as a team). Discuss your suggestions for Marsha. As a team, come to a consensus on what Marsha should do next. Should she confront Steve? What should she tell Dennis?
3. Write up your recommendations in the form of a business memo addressed to Marsha.

Stage 2:

Marsha discusses the situation with Alan, the MarTech employee who trained Steve. Marsha asked Alan if he ever saw Steve sleeping on the job:

"When I was training him, I was with him the whole time, so no. During the transition period, however, I would come in toward the end of the shift to see if anything had happened overnight. The computer room is secured and is enclosed with glass walls. I could see him to some extent, but his back was to me, and he was reclining in Dennis' chair, which has a high back. A couple of times, yeah, I thought it looked like he might be sleeping. When I hit the security buzzer, however, he immediately jumped up and let me in. I once asked him about it, but he just laughed and said he was just relaxing and listening to music. Look, this is all confidential, right?"

On the next Monday evening, Marsha drives out to the client's site right before Steve's shift. She informs Dennis that she is there to determine "whether or not Steve is doing his job."

After Dennis admits Marsha to the computer room and leaves for the day, Marsha takes a small video camera from her purse and hides it in the bookshelf next to Dennis' chair. She turns it on and leaves.

#### Discussion Questions

1. (Work Individually). Consider the stockholder, stakeholder, and social contract theories of ethics. From your perspective, are Marsha's actions "ethical"? Why or why not?
2. As a team, come to a consensus on Marsha's actions.
3. Assume Marsha plays back the video and determines that Steve indeed spends the majority of the shift sleeping in the chair. What should she do?

## MarTech Consulting Teaching Notes

### Theories of Ethics (from Pearlson and Saunders)

Stockholder theory. Management's ethical duty is toward the stockholders. Management's responsibility is to use its resources in a manner that maximizes profits and returns to the owners of the corporation. This responsibility is qualified in two ways:

- Management is bound to use legal and nonfraudulent means
- Management must favor a long-term view of stockholder interest over a short term view

Stakeholder theory. Management is bound to the stockholders of the company, but also has a fiduciary responsibility to all who have a stake or claim to the firm. A stakeholder is "any group that vitally affects the survival and success of the corporation, or whose interests the corporation vitally affects" (p. 199). Stakeholders might include:

- Customers
- Employees
- Suppliers
- Local community

Stakeholder theory states that corporations must balance the rights of all stakeholders when evaluating the ethics of a decision. They must also be careful not to impinge on the rights of any one stakeholder.

Social Contract Theory. Social contract theory states that a corporation must strive to create more value to society than it consumes. In short, corporations must create value for consumers and for its employees, and the decisions made must reflect a movement toward that value creation. Profits are of less a concern than improvement of society and basic tenets of fairness and justice.

### Notes on the Stages

#### Stage 1:

##### Marsha knows

- Customer is not happy and may drop MarTech
- There is a problem at the client site
- Faulty or inadequate hardware may be contributing to the problem

##### Marsha doesn't know

- Is Steve sleeping?
- Steve's past performance record
- Has Steve been adequately trained?
- Is the slow response time a result of poor or inadequate training?
- Is the client's server adequate to handle the level of customer response?

#### Stage 2:

Thought Question 1: Do you fire Steve?

- If the evidence only comes from the video recorder, you should not terminate. Instead, put policies in place that make it clear another incident will result in termination.
- If Alan is willing to state that he did see Steve sleeping, then terminate based on Alan's word
- Ask Steve if he has ever slept on the job. Sometimes employees will be honest. In that case, terminate based on the admission.

Thought Question 2: Is Alan's silence a problem?

- Alan contributed to the problem by not relaying his concerns to Marsha
- Company may actually terminate if Steve was actually sleeping on the job.
- How might your decision to discipline/fire Alan be different if Alan were Steve's boss? (Alan then has a clear responsibility to report or discipline Steve. Situation is a clearer discipline problem).

Thought Question 3: Do you discipline Marsha?

- If the video recorder action resulted from ignorance, then there is a problem and she should be disciplined.
- If a policy is in place that she knowingly violated, you might terminate.

## ***Problem Writing Worksheet***

*This worksheet is offered to help you think about how you will teach a problem you are in the process of writing.*

**Problem Title:**

**Author:**

**Department/  
Discipline:**

**Target student population:** *(Majors or nonmajors? Beginning or advanced? Large- or small- enrollment? Subject? Other?)*

**Length of time/Staging** *(How many class periods [of what duration each] will it take? Will it unfold in progressive disclosure format, or be distributed all at once?)*

**Niche in course** *(When in the semester? What comes before it? What comes after? Will it be a single event, or will other problems be used?)*

**Brief Abstract** *(of content of the problem; learning objectives for students)*

**Format of Delivery** *(What will the instructor do - mini-lectures during or after the problem? whole class discussions? How will the instructor help groups to make forward progress and stay on task? How will the instructor/students end the problem? Please provide a brief description of general strategies, then expand on this description for each stage of the problem in the Teaching Notes section below.)*

**\*Developed by Deborah Allen for Winter ITUE, 2001**

**Instructor Resources** (*What resources did you consult to write the problem? What content-related resources would another instructor find helpful if he/she wanted to use your problem?*)

**Student Resources** (*What resources will students use in working through the problem? Which of these, if any, will you provide for them?*)

**Stage-by-Stage Teaching Notes** (*What are the learning objectives for students? Why did you ask the particular end-of-stage questions that you did - what did you intend them to accomplish? How will the instructor introduce the problem? For each stage of the problem, how will it unfold, including the roles of instructor [lectures? discussions? feedback?] and students? What conceptual pitfalls might the students encounter and how will they get past them? How will the instructor help groups to make forward progress and stay on task? How will the instructor/students end the problem? How will the instructor be assured that all group members have contributed responsibly?*)

## **Notes (Cont.)**

**Products** (*Will the students have to hand in a product at the end of the problem? Will it be individual or group? Will it be graded? Towards what percentage of the overall grade in the course will it contribute? Which of the problem objectives will it assess?*)

**Assessment** (*How will you know if students have met the content and process objectives for the problem? Will these assessment strategies be individual or group? Will it be turned in for a grade? Towards what percentage of the overall grade in the course will it contribute? NB: Please fill out this section for any assignments, quizzes, exam questions, etc. that are not described in the "Products" section above, providing examples of specific questions, instructions, etc.*)

