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| LEARNING OBJECTIVES |  |

* Explain why the Introduction to MIS class is the most important class in the business school.
* Define what is meant by “MIS.”
* Explain how to use the five-component model.
* Explain what is meant by “information.”
* Describe what makes some information better than other information.
* Explain why the difference between information technology and information systems is important.
* Anticipate the technology of the year 2021.

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| CHAPTER OUTLINE |  |

* Why is introduction to MIS the most important class in the business school?
* Are there cost-effective business applications of Facebook and Twitter?
* How can I attain job security?
* How can introduction to MIS help you learn nonroutine skills?
* What is MIS?
* Components of an information system
* Development and use of information systems
* Achieving business goals and objectives
* How can you use the five-component model?
* The most important component—YOU
* High-tech versus low-tech information systems
* Understanding the scope of new information systems
* Components ordered by difficulty and disruption
* What is information?
* Definitions vary
* Information is subjective
* What makes some information better than other information?
* Accurate
* Timely
* Relevant
* Just barely sufficient
* Worth its cost
* Why is the difference between information technology and information systems important?
* 2021?

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| IN CLASS EXERCISE 1 |  |

## Information Systems and Online Dating

1. *Visit one of the proprietary method sites and one of the common interest sites.*

Students’ choice of sites to visit will vary.

1. *Summarize the process for matching couples that is used by each site.*

Student answers will vary depending on the sites visited. For illustration:

From the PerfectMatch.com website: “Perfectmatch.com® (Perfectmatch), a leading online dating and relationship service, is the best approach for adults seeking successful, lasting relationships. It is the only online dating and relationship service to offer the Duet® Total Compatibility System (Duet®), co-developed by renowned relationship expert Dr. Pepper Schwartz (Dr. Schwartz). Based on over 35 years of research, Duet® analyzes the “whole person,” taking into account each member's Personality, Values and Ideals, Life and Lovestyle, Preferences and their Love & Money Assessment to identify and find the person right for them. This unique and proprietary system enables Perfectmatch to provide both the best online capabilities and member experience to those seeking a real love, a relationship or marriage.” From [www.perfectmatch.com/aboutus/index.asp?v=0&rt=/index.asp](http://www.perfectmatch.com/aboutus/index.asp?v=0&rt=/index.asp) accessed 9/23/2010.

From the GoodGenes.com web site: “GoodGenes.com is an exclusive introduction network. We provide opportunities for single graduates and faculty of specific universities and colleges to meet well-educated members of the opposite sex. Good Genes requires proof of status as a graduate or faculty member from all applicants before joining. We also discreetly verify the status. This means that you can feel more comfortable choosing the companion that's right for you.” From [/www.goodgenes.com/Pages2/intro.html](http://www.goodgenes.com/Pages2/intro.html) accessed 9/23/2010.

1. *Describe the revenue model of each site.*

PerfectMatch.com allows users to begin to use the site with a free basic membership, but a fee-based premium membership is required to actually use the system and find potential matches. The site also includes some advertising.

GoodGenes.com requires a membership fee. There is no advertising on the site.

1. *Using general terms, describe the need these sites have for:*
	1. *Hardware*

Hardware includes the servers that store the web pages and the customer data and run the profile development and person matching applications.

* 1. *Software*

Software includes the web server and database server operating systems, the database management system, the HTML pages for the web site, and the application software that does the personality assessment and person matching.

* 1. *Data*

Data is the characteristics of the clients that are entered into the system during the profile development process plus the membership data entered in by each client.

* 1. *Procedures*

Procedures are the ways that the clients interact with the system, entering data, getting results, deciding to pursue certain matches, etc.

* 1. *People*

People are the clients plus the people who developed and maintain the site and the matching software, customer support personnel.

1. *People sometimes stretch the truth, or even lie, on matching sites. Describe one innovative way that one of the two companies your team chose could use information systems to reduce the impact of this tendency. As you prepare your team’s answer, keep the availability of nearly free data communications and data storage in mind.*

People’s claims could be compared with other information they have posted about themselves on social networking sites. Inconsistencies could be easily identified—such as the person who is registering on a dating site for singles but has a Facebook page with photos of a spouse and children.

1. *Suppose the company in your answer to step 5 has requested your team to implement its idea. Explain how having strong personal skills for each of Reich’s four abilities (abstract thinking, systems thinking, experimentation, and collaboration) would enable each of you to be a better contributors to your team.*

Abstract reasoning will enable the team to construct and use a model or representation of ways that client characteristics can be verified through “connections” with data found on other social networking sites. Systems thinking involves identifying and modeling the components of a system and connecting the inputs and outputs among those components into a sensible whole, one that explains the phenomenon observed. This will be valuable to create the verification model that will be used to assess veracity of the client’s profile. Experimentation is the willingness and ability to try various approaches to this assessment problem in a systematic way. Collaboration is the ability to work effectively in a team to attack this project effectively.

1. *Working as a team, prepare a 3-minute verbal description of your answer to steps 5 and 6 that all of you could use in a job interview. Structure your presentation to illustrate that you have the four skills in step 6.*

Student responses will vary.

1. *Deliver your answer to step 7 to the rest of the class.*

Student responses will vary.

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| USING YOUR KNOWLEDGE |  |

1. *One of life’s greatest gifts is to be employed doing work that you love. Reflect for a moment on a job that you would find so exciting that you could hardly wait to get to sleep on Sunday night, so that you could wake up and go to work on Monday.*
2. *Describe that job. Name the industry, the type of company or organization for whom you’d like to work, the products and services they produce, and your specific job duties.*

Student answers will vary.

1. *Explain what it is about that job that you find so compelling.*

Student answers will vary. Look for some common themes, such as “variety, challenging, interesting work, helping others, making a difference.”

1. *In what ways will the skills of abstraction, systems thinking, collaboration, and experimentation facilitate your success in that job.*

Student answers will vary. Look for the fact that these skills will help in dealing with new and/or complex issues: Abstraction will help by making and manipulating models. Systems thinking will help in constructing a sensible whole out of the observed components. Collaboration will improve the ability to give and receive constructive feedback. The ability to experiment will improve the ability to analyze and take advantage of an opportunity.

1. *Given your answers to parts a through c, define three to five personal goals for this class. None of these goals should include anything about your GPA. Be as specific as possible. Assume that you are going to evaluate yourself on these goals at the end of the quarter or semester. The more specific you make these goals, the easier it will be to perform the evaluation. Use Figure 1-2 for guidance.*

Student answers will vary. Some desirable goals that you should try to motivate your students to adopt might be:

* I want to be able to recognize the underlying business need that is addressed by information systems I encounter.
* I want to be conversant with basic technical terminology so that I am not intimidated when evaluating a new technology.
* I want to strengthen my nonroutine cognitive skills.
* I want to be an effective collaborator—able to give and receive critical feedback.
* I want to understand the most effective process of developing an information system.
* I want to know what questions to ask and I want to be able to understand the answers I’m given so that I can play an important role for my future employer.

*2. Consider costs of a system in light of the five components: Costs to buy and maintain the hardware; costs to develop or acquire licenses to the software programs and costs to maintain them; costs to design databases and fill them with data; costs of developing procedures and keeping them current; and finally, human costs both to develop and use the system.*

1. *Over the lifetime of a system, many experts believe that the single most expensive component is people. Does this belief seem logical to you? Explain why you agree or disagree.*

It is likely that this belief is true. An information system is only as good as the people who have developed it and who make use of it to perform their business functions more effectively and efficiently. It is very costly to hire and retain qualified, creative, and motivated people. Without those people, however, even the most technically sophisticated system will be of little value to the organization.

1. *Consider a poorly developed system that does not meet its defined requirements. The needs of the business do not go away, but they do not conform themselves to the characteristics of the poorly built system. Therefore, something must give. Which component picks up the slack when the hardware and software programs do not work correctly? What does this say about the cost of a poorly designed system? Consider both direct money costs as well as intangible personnel costs.*

If a system does not meet its requirements, the people and procedures will have to adjust and “pick up the slack.” People will have to change their behaviors to work with the system. This may result in reduced productivity at a minimum. In addition, annoyance and frustration may build to the point where people actually avoid the system in some fashion—they may find a way not to use the system at all (thus defeating its purpose); they may avoid using it by increasing absenteeism; or they may find another job.

1. *What implications do you, as a future business manager, take from parts a and b? What does this say about the need for your involvement in requirements and other aspects of systems development? Who eventually will pay the costs of a poorly developed system? Against which budget will those costs accrue?*

It is hoped that students will appreciate how important it is that business professionals play an active role in systems development. Requirements not only must be delineated for the system, but business managers (who are paying the bills) must ensure that the requirements are being fulfilled in the new system. If they are not fulfilled, the business unit not only will have wasted the development costs; it will experience ongoing costs of decreased productivity and possibly higher staff turnover.

*3. Consider the four definitions of information presented in this chapter. The problem with the first definition, “knowledge derived from data,” is that it merely substitutes one word we don’t know the meaning of* (information) *for a second word we don’t know the meaning of* (knowledge)*. The problem with the second definition, “data presented in a meaningful context,” is that it is too subjective. Whose context? What makes a context meaningful? The third definition, “data processed by summing, ordering, averaging, etc.,” is too mechanical. It tells us what to do, but it doesn’t tell us what information is. The fourth definition, “a difference that makes a difference,” is vague and unhelpful.*

 *Also, none of these definitions helps us to quantify the amount of information we receive. What is the information content of the statement that every human being has a navel? Zero—you already know that. In contrast, the statement that someone has just deposited $50,000 into your checking account is chock-full of information. So, good information has an element of surprise.*

 *Considering all of these points, answer the following questions:*

1. *What is information made of?*

Information is made of data that has been processed in some way to be meaningful to the recipient.

1. *If you have more information, do you weigh more? Why or why not?*

If you are carrying around a 1,000-page report that contains information, then you might say information causes you to physically weigh more. In most situations, however, having more information does not result in a weight gain. It results in a change in your brain.

1. *If you give a copy of your transcript to a prospective employer, is that information? If you show that same transcript to your dog, is it still information? Where is the information?*

A transcript from a prospective employee is meaningful to an employer trying to fill a position. The content of the transcript (courses taken, grades earned) has value in the hiring context. A dog has no use for the content of the transcript and so it has no value to him. If the piece of paper the transcript is printed on is crumpled up, then it might have value to the dog as an item to chase or tear up (depending on the dog).

1. *Give your own best definition of information.*

Student answers will vary. Despite its subjectivity, I still like “information is data that is meaningful within a context.” Also, look for the fact that data usually must be transformed in some way to be meaningful. Moreover, to provide value the information must make a difference to the recipient.

1. *Explain how you think it is possible that we have an industry called the* information technology industry*, but we have great difficulty defining the word* information*.*

We have many everyday terms that are difficult to define. We speak of the health care industry, but we typically only define “health” in the negative (the absence of disease). This is just another example of a term that is broadly understood but difficult to define precisely.

*4. The text states that information should be worth its cost. Both cost and value can be broken into tangible and intangible factors.* Tangible *factors can be directly measured;* intangible *ones arise indirectly and are difficult to measure. For example, a tangible cost is the cost of a computer monitor; an intangible cost is the lost productivity of a poorly trained employee.*

*Give five important tangible and five important intangible costs of an information system. Give five important tangible and five important intangible measures of the value of an information system. If it helps to focus your thinking, use the example of the class scheduling system at your university or some other university information system. When determining whether an information system is worth its cost, how do you think the tangible and intangible factors should be considered?*

Tangible costs:

* Cost of hardware components
* Cost of software components
* Cost of database components
* Cost of training users
* Cost of hiring users and/or developers

Intangible costs:

* Cost of searching for information that is difficult to find
* Cost of making a decision when information arrives after the fact
* Cost of frustration when system does not work as expected
* Cost of decision errors when information is inaccurate
* Cost of employees trying to work around or avoid a problematic system

Tangible value:

* Increased sales to new customers
* Increased sales due to more repeat customers
* Increased employee productivity
* Decreased hiring costs due to lower employee turnover
* Increased quality resulting in fewer defects in output

Intangible value:

* Increased employee satisfaction
* Increased customer satisfaction
* Improved management decision making
* Decreased employee absenteeism
* Decreased employee turnover

To determine if an information is worth its cost, the values of all relevant tangible costs and benefits should be estimated as accurately as possible (easier said than done, of course). In addition, the values of intangible costs and benefits can sometimes be estimated with a little effort. If the intangibles cannot be quantified, they should at least be described so that their existence is recognized and appreciated.

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| COLLABORATION EXERCISE 1 |  |

*Collaborate with a group of fellow students to answer the following questions. Use Google Docs, Windows Live SkyDrive, SharePoint, or some other collaboration systems to conduct your meetings. Your answers should reflect the thinking of the entire group, and not just one or two individuals.*

1. *Abstract reasoning*
2. *Define* abstract reasoning, *and explain why it is an important skill for business professionals.*

Abstract reasoning is the ability to construct and use a model or representation.

1. *Explain how a list of items in inventory and their quantity on hand is an abstraction of a physical inventory.*

The inventory list and quantity on hand is a representation of the actual items on shelves in the warehouse.

1. *Give three other examples of abstractions commonly used in business.*

Student answers will vary, but some examples include projects plans, budgets, and business process models.

1. *Explain how Jennifer failed to demonstrate effective abstract-reasoning skills.*

Jennifer was unable to develop a model of the customer life cycle. She developed a model that made no sense and had customers interacting with Accounts Receivable before they were even customers. She claimed that she knew the process but couldn’t put it down on paper.

1. *Can people increase their abstract-thinking skills? If so, how? If not, why not?*

Yes, abstract thinking skills can be developed with practice. Working with existing models is a place to start, but actually creating the models and examining their usefulness is even more essential to develop these skills.

1. *Systems thinking.*
2. *Define* systems thinking, *and explain why it is an important skill for business professionals.*

Systems thinking involves identifying and modeling the components of a system and connecting the inputs and outputs among those components into a sensible whole, one that explains the phenomenon observed. This is an important skill because business people have to be able to identify and understand the relationships among elements of a complex situation.

1. *Explain how you would use systems thinking to define why Moore’s Law caused a farmer to dig up a field of pulp wood trees. Name each of the elements in the system and explain their relationships to each other.*

Pulp wood trees are inputs in the production of paper. Moore’s law implies that more and more content will be stored digitally, and there will be less printed material produced. Consequently, the demand for paper will fall. The farmer recognizes that the value of his trees will decline over time as there is less demand for paper, so he decides to use his land to produce a product with a projected value.

1. *Give three other examples of the use of system thinking with regard to the consequences of Moore’s Law.*

Student answers will vary. Some examples include Kodak’s shifting its business away from film cameras and film development to digital cameras and photo

printers; Google’s project of scanning and digitizing books; Amazon and Sony’s development of electronic reader devices is another example.

1. *Explain how Jennifer failed to demonstrate effective systems thinking skills.*

Jennifer’s was unable to understand and model the correct components and relationships between components in the customer life cycle.

1. *Can people improve their system thinking skills? If so, how? If not, why not?*

Yes, systems thinking skills can be developed with practice. Applying existing models to different situations is a place to start, but actually creating the models, critiquing the models, and examining their usefulness is even more essential to developing these skills.

1. *Collaboration*
2. *Define* collaboration, *and explain why it is an important skill for business professionals.*

Collaboration is the ability to work productively with others when developing ideas and plans. A good collaboration results in a final work product that is superior to one that would be developed by a person working alone.

1. *Explain how you are using collaboration to answer these questions. Describe what is working with regards to your group’s process and what is not working.*

Students answers will vary. It is important that you stress that students should not just divide the work up between the group members and assemble the individual contributions into a whole (a typical student approach to a group project assignment). Good collaboration involves several iterations in which ideas are contributed, reviewed, critiqued, and refined. All members contribute to the development and refinement of ideas.

1. *Is the work product of your team better than any one of you could have done separately? If not, your collaboration is ineffective. If that is the case, explain why.*

Students answers will vary. It is likely that students have not spent enough time and effort reviewing and evaluating each other’s ideas and improving the work product. Many times student groups are satisfied with whatever is contributed and little attention is paid to critique and refinement.

1. *Does the fact that you cannot meet face to face hamper your ability to collaborate? If so, how?*

Student answers will vary. Email is not a very easy way to collaborate due to the time lag involved between when messages are sent and eventually read. Because there is no central repository of the work product that all members can access, it is difficult to know what the latest version of the work product is and to keep track of changes to the work product.

1. *Explain how Jennifer failed to demonstrate effective collaboration skills.*

Jennifer was unwilling to share her ideas and work-in-progress with others because she wanted to wait until she felt she was “done.” She failed to seek out the benefit of having others review her ideas and help her improve upon them.

1. *Can people increase their collaboration skills? If so, how? If not, why not?*

Collaboration skills can definitely be improved with practice. It may be hard for some people to offer up half-formed ideas to others and to subject themselves to criticism, but the benefits will help them overcome this reluctance.

1. *Experimentation.*
	1. *Define* experimentation, *and explain why it is an important skill for business professionals.*

Experimentation involves creating and testing promising new alternatives, consistent with available resources. In today’s demanding business environment, new ideas will be essential to success, and business people have to overcome their fear of failure and pursue new approaches rationally.

1. *Explain several creative ways you could use experimentation to answer this question.*

Students could experiment with different ways of collaborating, other than emailing. For example, the group members could arrange to meet in a chat room and work together on developing their answers by communicating in that forum.

1. *How does the fear of failure influence your willingness to engage in any of the ideas you identified in part b?*

If any of the group members respond to a suggested process with the comment, “that will never work,” he may be reflecting his fear of failure. Unwilling to try a new way of doing things may be an accurate assessment that the approach is unworkable, but it could also be an unwillingness to work in a new way.

1. *Explain how Jennifer failed to demonstrate effective experimentation skills.*

Jennifer was unable to share new ideas with other. She was willing to do what she was told, but did not have the confidence to discuss any new ideas she had with others in case the ideas did not work out.

1. *Can people increase their willingness to take risks? If so, how? If not, why not?*

It is hard for some people to change their innate willingness to take risks. The best way to overcome this is to work with a group that accepts new ideas with enthusiasm and does not ridicule a member for suggesting a new approach. Once some success is gained, the person will be more willing to take risks the next time.

1. *Job Security*
2. *State the text’s definition of* job security*.*

The text defines job security as “a marketable skill and the courage to use it.” The text also argues that marketable skills are no longer specific task-related skills, but rather are “strong non-routine cognitive skills.”

1. *Evaluate the text’s definition of* job security*. Is it effective? If you think not, offer a better definition of* job security*.*

It is likely that students will be dismayed that the more traditional task-oriented skills they are learning (e.g., computer programming, accounting, marketing) will not provide them with job security. That is probably not the message they receive from their parents and grandparents. However, this definition of *job security* should cause the students to think critically about what they are getting from their collect education and may cause them to think differently about their experiences in college.

1. *As a team, do you agree that improving your skills on the four dimensions in Collaboration Exercises 1-4 will increase your job security?*

Student answers will vary, but we hope that thinking about these dimensions will change their attitudes about what comprises marketable skills and how to work to develop them.

1. *Do you think technical skills (accounting proficiency, financial analysis proficiency, etc.) provide job security? Why or why not. Do you think you would have answered this question differently in 1980? Why or why not?*

Technical skills are not irrelevant to job security, but they are not sufficient to guarantee job security. This circumstance is very different than in 1980, when technical skills probably were sufficient to get and keep a decent job.

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| CASE STUDY 1 |  |

## Requirements Creep at the IRS

*1. Why did the Oversight Board place leadership and ownership of the Modernization program on the business units? Why did it not place these responsibilities on the ITS organization?*

The business units are the ultimate owners of these systems. The systems must be designed to align with and meet the needs of the business units. Therefore, the business units must assume an ownership and leadership role in the development of these systems. The ITS organization can manage and guide the development process, but it cannot assume responsibility for sponsoring the system development projects. ITS works in partnership with the project owners and sponsors to get the systems developed.

*2. Why did the Oversight Board place the responsibility for controlling scope changes on the business units? Why was this responsibility not given to the BSM? To ITS? To Computer Sciences Corporation?*

Scope decisions have to be made by the ultimate owners and sponsors of the projects— the business units. Only the business units have the ability to evaluate and decide on tradeoffs that must be made when adjusting a system’s scope. By making those decisions, the business units understand the reasoning for the scope changes and can accept the changes that are necessary. No other participant in the project has the insight to make these decisions.

*3. The second recommendation is a difficult assignment, especially considering the size of the IRS and the complexity of the project. How does one go about creating “an environment of trust, confidence, and teamwork?”*

*To make this recommendation more comprehensible, translate it to your local university. Suppose, for example, that your College of Business embarked on a program to modernize its computing facilities, including computer labs, and the computer network facilities used for teaching, including Internet-based distance learning. Suppose that the Business School dean created a committee like the BSM that hired a vendor to create the new computing facilities for the college. Suppose further that the committee proceeded without any involvement of the faculty, staff, students, or the existing computer support department. Finally, suppose that the project was 1 year late, had spent $400,000, was not nearly finished, and that the vendor complained that the requirements kept changing.*

*Now, assume that you have been given the responsibility of creating “an environment of trust, confidence, and teamwork” among the faculty, staff, other users, the computer support department, and the vendor. How would you proceed?*

This is indeed a difficult assignment. One potential approach would be to hand pick a project team and give them a project with modest goals, high visibility, and a high probability of success. The team needs to demonstrate to the organization that success is possible. After achieving a successful outcome, members of this team could then be assigned to other project teams and can carry the successful project approach with them.

*4. The problem in question 3 involves at most a few hundred people and a few sites. The IRS problem involves 100,000 people and over 1,000 sites. How would you modify your answer to question 3 for a project as large as the IRS’s?*

I would use the same strategy but perhaps would employ it in multiple small projects within a number of business units. The seeds of success would then be distributed throughout the business units.

*5. If the existing system works (which apparently it does), why is the BSM needed? Why fix a system that works?*

The existing system may work, but it also may have many limitations. It also may prevent the IRS from doing things it would like to do in the future. Often, today’s working systems need replacement because they simply cannot provide the platform necessary for the organization’s future goals and objectives.