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PREFACE

This handbook is designed to be used by students doing BUS or ISYS 895 research projects in information systems, including technical projects in electronic commerce. It consists of notes on various aspects of the research process. The notes focus specifically on research in the information systems field. Since this handbook contains only notes, it should be used in conjunction with lectures or discussions related to the topics in the handbook.
CHAPTER 1

INTRODUCTION

Before you can begin a research project you need to understand what research is and have a general understanding of the research process. This chapter examines these topics.

What is Research?

Research is hard to define; its definition can fall into two extremes:

1. Research is an investigation of a problem or question with which the researcher is not familiar, but with which others may be familiar.
2. Research is an investigation of a problem or question with which no one is familiar.

The difficulty with the first definition is that any form of study falls into it. The difficulty with the second definition is that much research is done that does not fall into it. In reality the definition of research falls someplace between these two extreme definitions.

Key Characteristics of Research

To understand what research is, we need to look at its key characteristics:

1. Research is problem or question based. Research is based on a problem or question for which the researcher and perhaps others do not have a solution or answer.
2. Research is systematic. Research involves a systematic investigation or inquiry into the problem or question.
3. Research reaches a new conclusion. Research reaches a conclusion about the problem or question that the researcher and usually others have not reached.

Thus research is a systematic inquiry into a problem or question of interest to the researcher, with the goal of reaching a new conclusion about the problem or question.

An Overview of the Research Process

There are various ways of describing the systematic process of research, but typically the research process involves the following steps:

1. Determine the problem or question you wish to investigate. This step is called project selection.
2. Investigate what others have said or done in relation to your problem or question (e.g., library research, company information research, Web searching, etc.). This step is called secondary research.

3. Formulate ideas about a possible solution to your problem or a possible answer to your question. These ideas should be based on your secondary research and on your own creative thoughts. Then develop ways of testing your ideas or of proving that your ideas are correct or incorrect and carry out the tests or the proofs. This step is called primary research.

4. Repeat the process from any point until you reach a conclusion about your problem or question.

5. Present the results in a written report and an oral presentation.

Exercise

Describe one project that you did for another course and explain whether it is research by the definition given in this chapter. Which of the key characteristics of research listed in this chapter did it have? Which of the steps in the research process listed in this chapter did you follow?
CHAPTER 2

PROJECT SELECTION

The first step in the research process is to select a project. Without a clearly defined research project the other steps in the research process are impossible to complete. This chapter gives hints on how to select a good research project and how to write a clear project proposal.

How to Select a Research Project

Selecting a project can be the most difficult task of a research activity. Sometimes researchers say that in research they spend one-third of their time deciding what to do, one-third of their time doing it, and one-third of their time writing the report. Because you have a time limit for completing your project, the less time you spend deciding what to do, that is, selecting your project, the more time you will have to complete it.

The most important thing is to select a project in which you are interested, because if you are not interested in the project you will not want to put a lot of effort into it. In addition, the project should be in an area in which you already have some knowledge. Although you can do a project in an entirely new area, doing so will take more time because you first will have to familiarize yourself with the basics of the subject. Finally, the project should be one that can be completed in the time available.

The Research Problem or Question

Your project must involve the investigation of a research problem or research question. This problem or question is the central issue that you investigate in your project and must be of general interest in your field. That is, it must be something that is of interest to other academics and/or practitioners in your field. It is not the same as a business problem faced by a specific business. For example, a certain business might need to develop an e-commerce system and thus has a business problem of which software to use in this development. This problem is only of interest to the specific business and not of general interest in the e-commerce field. Thus it would not be an acceptable research problem for your project (although it could be used as the basis for a case study). On the other hand, developing a general procedure for selecting e-commerce software for any type of business is of general interest in the e-commerce field and thus could form the basis for a research problem or research question for your project.
Types of Research Projects

One of the most important decisions in project selection is what type of primary research you are going to do. Primary research methodologies are discussed in Chapter 4 of this handbook, but some common ones that students use are:

**Interviews of key informants.** This form of research involves identifying and interviewing a small number (usually 4-6) of individuals who are very knowledgeable in the area of your research (called *key informants*). The interviews must be well-planned with the same questions for all individuals. The responses received from these interviews are then analyzed to gain insight into the research problem or question. If you do this type of project, you must do secondary research into the problem area you are investigating before conducting the interviews.

**Survey.** Survey research involves gathering data from a number of sources in order to reach a conclusion. The survey could involve questions asked of people through an online survey, a written questionnaire, telephone interviews, or face-to-face interviews. It could also involve surveying products, tools, or methods. Another type of survey involves a systematic review of a broad range of published articles, for example, surveying many published case studies of a particular type. Still another type of survey involves surveying web sites to investigate the sites’ characteristics. Sometimes in this form of research you state one or more hypotheses, gather appropriate data to test the hypotheses, and then draw conclusions about the hypotheses by analyzing the data, usually using statistical techniques. If you do this type of project, you must do secondary research into the problem area you are investigating. Then you can do your survey and analyze the data that you gather.

**Experiment.** Experimental research involves gathering data in a controlled environment, such as a computer lab. Often people are used as subjects of the experiment. As with a survey, you may have to state one or more hypotheses. Then you gather data by running the experiment and analyzing the results, usually using statistical techniques, to reach a conclusion. You must do other secondary research into your problem area before setting up the experiment.

**Case study.** Case study research involves examining one situation, usually in a business. This type of research often is an applied project in which you use some technique or tool in a real-world situation and draw a conclusion about the effectiveness of the technique or tool. The case could involve many different types of activities. For example, you could do a case study of how a particular business handles a certain information system situation. As another example, you could do a case study in which you design and implement an electronic commerce system for a business. Setting up a database or developing a software application for a particular business are also case studies. In all these examples you are doing something in a real business or organization. You will have to do secondary research to thoroughly investigate the problem area in which you are working before doing the case study.
Model or methodology development. In this form of research you develop a model, methodology, conceptual framework, or similar approach to a problem. The approach you develop must be based on secondary and possibly other research (such as a survey). You must test the approach, which you can do in a number of ways (such as by an experiment or a case study). You reach a conclusion about your approach based on the test that you did. This type of research often is combined with one of the other types.

Other methodologies. A number of other research methodologies can be used besides those listed here. Often the actual approach is a combination of several methodologies. You do not have to select one of the research methodologies listed here for your project.

Of least interest are the details of your primary research methodology, such as the details of how a survey was conducted, an experiment run, or a case study undertaken, although these details should be included in your report. Of most interest are the general concepts that you learn, the analysis that you do, and the general conclusion that you reach.

Characteristics of an Acceptable Research Project

You can undertake many types of research projects in information systems and electronic commerce. The following are some characteristics of an acceptable project:

1. Your project is based on a research problem or question of general interest in your field.
2. You learn something related to your research problem or question beyond what you have learned in other courses.
3. You propose a creative solution to your research problem or a unique answer to your research question.
4. You gather data related to your research problem or question in some appropriate way, such as through a survey, experiment, or case study.
5. You analyze your data to draw a conclusion about your research problem or question.

Several types of projects are not acceptable. One type of unacceptable project is a pure library research project in which you simply summarize the literature on a subject. Library research normally is part of a successful project, but it cannot be the only research in a project. Another type of unacceptable project is a purely applied project, such as developing an application, in which you do no library or other research. Many other types of projects are acceptable and unacceptable, and your research supervisor will be the final judge of the acceptability of your project.

The project that you undertake must not be a repeat of a project you did or are doing in another course. For example, if you took a database course, you cannot simply design a database for a business using the methodology of that course. You can, however, go beyond the topics of a course. Thus, you could investigate alternative database design
Methodologies and apply several of these in a new situation. A project can be an extension of something that you did in another course, but not a repeat of it.

ISYS 895 students should do a project in the information systems field, including electronic commerce, that goes beyond the 800-level courses they have taken. BUS 895 students may do a project in information systems, including electronic commerce, or in another area of business.

You should not assume that your research supervisor will be able to help you with the details of your project. Your supervisor is not an expert in all aspects of the information systems field. You will have to work independently and solve most of your problems yourself.

**Characteristics of a Good Project Proposal**

You will have to prepare several project proposals. A good project proposal has the following characteristics:

1. The proposal states the objective of the research as a problem or question, not as a solution or answer.
2. The proposal is unambiguous.
3. The proposal delineates a research area that is neither so narrow that it is trivial nor so broad that it lacks focus.
4. The proposal describes research that can be completed in the time allowed.

**Preliminary Project Proposal**

Your preliminary project proposal is used to discuss project ideas with your research supervisor. It should

1. State the research problem or question that you wish to investigate.
2. Briefly explain how you plan to go about investigating it (that is, explain your research methodology).
3. State what the outcome of your project is likely to be.

The preliminary project proposal only needs to be one or two paragraphs long. Your research supervisor may require that it be in writing or may accept it orally. You may have to prepare several preliminary project proposals until one is acceptable to your research supervisor.

**Final Project Proposal**

Your final project proposal should be prepared after your preliminary project proposal has been approved, and after you have done some reading on your project topic and spent
some time thinking about it. The proposal should be 1 to 2 pages long and include the following:

1. Title: Give a preliminary title for your report.
2. Research problem: State clearly and completely the general research problem your project will address. This problem is the main research problem or question that you are investigating and should be of general interest in your field. In addition, if you are doing a project for a specific business or organization, also state the specific business problem faced by that business. The business problem is not the same as the research problem. (Example: Research problem: how to select e-commerce software for a business. Business problem: which e-commerce software should company X purchase.) You must also name the specific business or organization in your proposal, although you do not have to name it in your final report.
3. Problem importance: Explain why your research problem is an important one in your field and, if appropriate, why the business problem is important to the business.
4. Research methodology: Describe your plan for completing your project, including your primary research methodology. You should list the steps you expect to take to complete your project and explain the specific research approach you plan to use (e.g., case study, survey, etc.).
5. Human subjects: Explain completely any way that you expect to use human subjects in your research. Use of human subjects could include interviews of people, a case study in which you gather information from the employees of a company, a survey that people fill out (mail, Web, e-mail, in person, or any other way), an experiment with human subjects in a computer lab, or anything else that involves gathering information from humans or using human subjects. If you do not expect to use human subjects in your research, state so clearly in this part of your proposal.
6. Table of contents: Give a preliminary table of contents of your report consisting of chapter numbers and tentative chapter titles only. See Chapter 5 of this handbook for guidance.
7. References: List any references you have found that are related to your research problem.

**Human Subjects**

If your research involves the use of human subjects in any way, you must follow the procedures prescribed by the Office for the Protection of Human and Animal Subjects. These procedures can vary depending on how you use human subjects. See the following Web site for details: [http://www.sfsu.edu/~protocol/](http://www.sfsu.edu/~protocol/). Also consult with your instructor regarding the requirements for using human subjects.

**Exercise**

Write one sentence that states your research problem or question. The sentence can be in statement or question form. The sentence should be such that if you knew the solution to
the problem or the answer to the question now, you could write the conclusion to your report.
CHAPTER 3

SECONDARY RESEARCH

Before undertaking the main, or primary, research in your research project, you need to do secondary research. This chapter provides ideas for secondary research.

Secondary vs. Primary Research

Primary research, described in detail in Chapter 4 of this handbook, involves gathering original data by the researcher. Secondary research involves gathering data from research done by others.

In secondary research, you search for descriptions of research done by others about your research problem or about related research problems. You also gather background information about your problem area. The objective is to find as much information about your problem as you can from other sources before you start your primary research. This process often is called a literature review because you review the literature in your problem area.

Why do you do secondary research? There are a number of answers to this question including:

1. To gain a better understanding of the problem area. Often you are working in an area in which you have limited background and so you read what others have said about the area to increase your knowledge and understanding.
2. To find out what others have done in relation to the problem. You do not want to repeat things that others have already done.
3. To help form ideas about possible solutions to the problem. By reading what others have said, you often gain insights that lead to ideas for possible solutions to the problem.
4. To clarify your research problem. Often your research problem is ill-formed and reading about the problem area helps you clarify what the real problem is.
5. To help select an appropriate primary research methodology. You can see what methodology other researchers have used or gain other insights into the best methodology for your problem.

Sources of Secondary Data

There are many sources of secondary data. Most sources fall into one of the following categories:

1. Books
2. Articles in periodicals
3. Articles in conference proceedings
4. Research reports (e.g., unpublished working papers)
5. Industry reports (e.g., Forrester, Gartner, Jupiter Research)
6. Government documents
7. Statistical references (e.g., Statistical Abstract of the United States)
8. Company literature

Note: A white paper often is an article prepared by someone associated with a company that gives background related to the concept or design of the company's products. A white paper can provide useful information, but you must critically evaluate the information and the source.

**Locating Secondary Data Sources**

Locating secondary data sources usually involves searching using various databases, catalogs, and Web search tools. Some of the more useful items to use in a secondary research search are

1. **Online databases:**
   - ABI/Inform
   - EBSCOhost
   - IngentaConnect
   - Lexis/Nexis
   - ACM Digital Library
   - AIS e-Library

2. **Online library catalogs:**
   - Investigator (SFSU library)
   - MELVYL (UC libraries)
   - San Francisco Public Library online catalog

   Note: Links to many library online catalogs can be found at the SFSU library Web site: [www.library.sfsu.edu](http://www.library.sfsu.edu).

3. **Web search tools:**
   - Search engines (e.g., Google)
   - Directories (e.g., Librarians Index)
   - Meta-search engines (e.g., Dogpile)

   An excellent source of information on searching the Web can be found at [www.lib.berkeley.edu/TeachingLibGuidesInternetAbout.html](http://www.lib.berkeley.edu/TeachingLibGuidesInternetAbout.html).
Note: Be extremely critical of anything you find on the Web. The quality of the information from Web sources can range from excellent to extremely poor. You must carefully evaluate the source of the information to decide how reliable it is.

**Obtaining Books and Documents**

After you have identified a book or document that you need, you can obtain it from a library or other source. If it is not available in the SFSU library, you can order it using the SFSU library document delivery service. This service lets you order books from other libraries. It also lets you order copies of articles from periodicals and other publications not available in the SFSU library. The service can take anywhere from a few days to a few weeks to find what you want so you need to plan ahead. The service is free and available at [http://www.library.sfsu.edu/services/requesting/index.html](http://www.library.sfsu.edu/services/requesting/index.html). Note that many articles, including some from academic publications, are available on the Web and so you should search there first.

**Libraries**

The libraries in the San Francisco Bay Area that are most likely to have useful sources of secondary data and that are available to you at no or minimal cost are

1. SFSU library
2. UC Berkeley library system (Business and Economics Library, Engineering Library)
3. San Francisco Public Library

**AISWorld Net**

AISWorld Net is a Web site managed by the Association for Information Systems (AIS) with links to many resources in the information systems field. It includes, among others, links to research pages on a variety of topics. These pages also have links to other sites. The URL of AISWorld Net is [www.aisworld.org](http://www.aisworld.org).

**Refereed vs. Nonrefereed Periodicals**

Research periodicals are usually refereed (or peer reviewed), which means that articles submitted to the publication are first reviewed by several outside experts. These experts usually are other researchers who are knowledgeable in the area of the article. The experts write reports to the publication's editor indicating what they think about the article, including whether it is original, accurate, well written, and a contribution to the discipline. The editor then decides whether to publish the article. (The periodical's policy regarding refereeing often is described at the beginning of each issue.) In nonrefereed periodicals, the editor usually makes the publishing decision without the advice of
outside experts. In general, the quality of the articles in refereed publications is better than that of the articles in nonrefereed publications, although many excellent articles are published in nonrefereed periodicals.

**Useful Refereed Periodicals**

Many refereed periodicals are published by academic organizations such as AIS and ACM. Most refereed periodicals are designed for readers who are academics or researchers in the information systems field. Some, however, are more "applied" than others and are designed for readers who are practitioners in information systems, as well as for academics and researchers. The following are some useful refereed periodicals. All are available in print form unless indicated. Most are also available online although you may have to be a member of the publishing organization to access them.

1. Association for Information Systems (AIS) publications:
   
   Communications of the AIS (online only)
   Journal of the AIS (online only)

2. Association for Computing Machinery (ACM) publications:
   
   Communications of the ACM
   Computing Surveys
   Transactions on Database Systems
   Transactions on Computer Human Interaction
   Transactions on Information Systems
   SIGMIS Data Base
   SIGMOD Record
   Other SIG (Special Interest Group) publications (may not be refereed)

3. Institute for Operations Research and Management Sciences (INFORMS) publications:
   
   Information Systems Research (ISR)
   Management Science

4. Institute for Electrical and Electronic Engineering (IEEE) publications:
   
   Transactions on Computers
   Transactions on Software Engineering
   Transactions on Networking
5. Decision Sciences Institute (DSI) publication:

   Decision Sciences

6. Other publications:

   MIS Quarterly
   Journal of MIS
   Decision Support Systems
   Information and Management
   European Journal of Information Systems
   IBM Systems Journal
   Harvard Business Review
   Sloan Management Review
   California Management Review

Journal rankings can be found at http://www.isworld.org/csaunders/rankings.htm.

**Useful Conference Proceedings**

Academic conferences publish documents called "proceedings", which contain articles presented at the conferences. Usually these articles are refereed, but the refereeing process normally is not as selective as that of good academic journals. Still, the articles in conference proceedings can be very useful. Many of the proceedings are online, but others can be found in good research libraries in print and/or CD-ROM form.

Some of the major conferences in information systems that are held each year and that publish proceedings are:

   International Conference on Information Systems (ICIS)
   Americas Conference on Information Systems (AMCIS)
   European Conference on Information Systems (ECIS)
   Pacific Asia Conference on Information Systems (PACIS)
   Hawaii International Conference on System Sciences (HICSS)
   Annual Meeting of the Decision Sciences Institute (DSI)

Links to these and many other conferences can be found at the ISWorld Web site.

**Useful Nonrefereed Periodicals**

Most nonrefereed periodicals are designed for practitioners in the information systems field, although their articles often are of interest to academics and researchers. The following are some useful nonrefereed periodicals:
Computerworld
Information Week
InfoWorld
Datamation

Note: See the November issue of Computing Reviews for a good list of publications in the computer science and information systems fields.

Exercise

Identify two refereed and one nonrefereed periodical that have articles related to your research problem or question.
CHAPTER 4

PRIMARY RESEARCH

The dominant task in a research project is to complete the primary research. This chapter explains some of the characteristics of primary research.

Primary vs. Secondary Research

Secondary research, described in detail in Chapter 3 of this handbook, involves gathering data from research done by others. Primary research involves gathering and analyzing original data by the researcher.

As explained in Chapter 1 of this handbook, research is a systematic inquiry into a problem or question of interest to you, with the goal of reaching a new conclusion about the problem or question. In primary research, you formulate ideas about a possible solution to your problem or a possible answer to your question. These ideas should be based on your secondary research and on your own creative thoughts. Then you develop ways of testing your ideas or of proving that your ideas are correct or incorrect, and carry out the tests or proofs. The way you do the tests or proofs depends on your primary research methodology.

Theoretical vs. Applied Research

Theoretical research is research that leads to a problem solution that forms a foundation for application (i.e., theory), for example, research into the theory of information system acceptance in organizations. Applied research is research that leads to a problem solution that is of immediate interest to nonresearchers, for example, research into the impact of information systems acceptance on organizational performance. There are many shades of research between theoretical and applied research.

Studying a subject you don't know is not research. Studying a subject, developing new theories that you wish to test, testing the theories, and drawing a new conclusion is research.

Inductive vs. Deductive Reasoning

In research you can use different forms of reasoning. Inductive reasoning or induction is a form of reasoning that draws a conclusion based on specific facts. This form of reasoning is the most common one used in research in business, many sciences, the social sciences, and many other fields. You gather facts, using observation, experiments, surveys, and other techniques. From the facts you can draw a general conclusion, but you
cannot prove a result absolutely. You cannot prove a result by induction; you can only increase your confidence in the conclusion.

Deductive reasoning or deduction is a form of reasoning that draws a conclusion by following a line of reasoning. Mathematical logic uses this approach. In mathematics, you start with axioms that you accept as true and then prove theorems. You can prove a result by deduction. Mathematics is not the only field in which deductive reasoning is used. Any field that uses an approach that starts with premises and follows a line of reasoning to a conclusion uses deduction.

Much research uses both induction and deduction.

**Empirical vs. Nonempirical Research**

Empirical research is research that reaches a conclusion from data gathered using various methods. Observations, experiments, and surveys are examples of methods used to gather data in empirical research. Empirical research uses induction as its main form of reasoning.

Nonempirical research is research that reaches a conclusion by some method other than gathering data. Mathematical proof is an example of a method used in nonempirical research. Nonempirical research uses deduction as its main form of reasoning.

Much research is a combination of empirical and nonempirical techniques.

**Model Building**

Much research in information systems involves developing models. A model is a representation of reality, for example, a model of how an organization's information systems evolve over time.

A model can be

1. Descriptive. This type of model describes how a system currently functions or is structured.
2. Prescriptive (normative). This type of model describes how a system should function or be structured.

A model can be represented in a number of ways, including

1. A written description.
2. Symbolic or mathematical notation.
3. A graph.
4. A diagram.
A model needs to be tested as part of the research to determine its usefulness. Testing can be done through an experiment, case study, or some other research approach.

**Methodology Development**

Much research in information systems involves developing a methodology, for example, developing a new database design methodology. A methodology essentially is a prescriptive model; it states how things should be done. It usually is expressed by a written description of the methodology, often accompanied by diagrams. An example is the system development life cycle model.

A methodology, like any model, needs to be tested as part of the research to determine its effectiveness. Testing can be done through an experiment, case study, or some other research approach.

**Conceptual Frameworks**

Often researchers in information systems talk about a conceptual framework or just a framework. A framework is a way of thinking about or conceiving of the ideas in a problem area. In essence a framework is a model for the ideas related to a problem area. For example, a conceptual framework for database design methodologies might be one that organizes the ideas related to the methodologies in terms of how close or distant they are to the user’s view of data. A framework is only good if it helps understand the problem area.

**Hypotheses**

In much research you state hypotheses (or propositions) that you wish to investigate. An hypothesis is a statement of the solution to the problem or answer to the question. You test each hypothesis to increase your confidence that it is correct or not correct, or you try to prove or disprove each hypothesis. Testing of an hypothesis can be done through a survey, case study, or some other research approach. Statistical analysis is often used to test an hypothesis.

**Conclusions**

A conclusion is the final result of your research. It is what you find out about your research problem or question. A conclusion can take several forms including, but not limited to, the following:

1. A solution to the research problem or an answer to the research question.
2. A partial solution or answer, along with an explanation of why the solution or answer is not complete.
3. An explanation of the direction in which the solution or answer may lie.
4. A statement that more research is needed to find a solution or answer, along with an explanation of what type of research is needed.
5. A statement that no solution or answer exists, along with an explanation of why there is no solution or answer.

In all cases, the conclusion must be based on the secondary and primary research you have done and must be soundly reasoned and accompanied with explanations of why it is the conclusion you reached.

A conclusion is not the same as a result from primary research. A conclusion is what you can say about your research problem or question based on the results from your primary research. For example, you may find that the average response to a question on a questionnaire is 5.5 out of 7. This is a result from your primary research. Now what can you say about your research problem or question from this and other primary research results? That is your conclusion.

The Research Process

The research process described below is a prescriptive model or methodology of how research should be done. It does not necessarily describe how research is done in reality. In fact, research is done in a variety of ways that may include any or all of the steps listed here. The hypothesis is that if you follow these steps you are more likely to have a successful outcome from your research than if you do not follow these steps. Although anecdotal evidence exists to support this hypothesis, the conclusion is that further research is needed.

The steps in the research process are as follows:

1. **Define the research problem or question.** Define a problem or question you wish to investigate.
2. **Do secondary research.** Investigate what others have said or done about your research problem or question.
3. **Do primary research.**
   a. Formulate ideas, hypotheses, or propositions related to your research problem or question, or develop models or methodologies that address the problem or question. The result of this step should be based on your secondary research and on your own creative thoughts.
   b. Develop ways of testing your ideas, hypotheses, propositions, models, or methodologies and carry them out, or prove or disprove the hypotheses or propositions logically.
4. **Reach a conclusion.** Based on your primary research, reach a conclusion about your research problem or question. To reach a conclusion, you may have to repeat the previous steps from any point.
5. **Present the results.** Prepare a written report and give an oral presentation describing your research and your conclusion.

The steps in the research process listed above may not necessarily be done in a sequential fashion. Often, you make a little progress then go back to a previous step, then make some more progress and go back again. In other words the research process is iterative.

**What to Do When You Get Stuck**

Often you get stuck and cannot think of what to do next. The following are several things you can do when this happens:

1. Think of a simple example and apply your ideas to that example.
2. Work on application or practice if you have been working on theory or concepts. Work on theory or concepts if you have been working on application or practice.
3. Think of a similar problem or question and solve it first.
4. Make assumptions that simplify your problem or question and solve the simple case first.
5. Isolate parts of the problem or question and work on just one part at a time.

**A Taxonomy of Research Methodologies**

The following is a taxonomy of research methodologies used in the information systems field. The methodologies are listed in order from the ones that give the strongest support for the conclusions to the ones that give the weakest support. There are other methodologies than these. Research projects often involve a combination of methodologies.

1. **Theorem proof.** Research that involves proposing and proving theorems.

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2. **Engineering design.** Today often called *design science*. Research that involves the application of rigorous techniques (e.g., techniques in science and mathematics) to the design of artifacts. Includes the design of tools, systems, methods, and models. Can involve simulation.

3. **Empirical research.** Research that relies on observation.

   a. **Laboratory experiment.** Laboratory study with an experimental design and high degree of controls. Can involve simulation.

   b. **Field test/experiment.** Examination of several or more organizations with an experimental design and controls.

   c. **Survey/field study.** Examination of several or more organizations, people, or other entities or items with an experimental design and no controls. Includes surveys of organizations, people, literature, web sites, tools, and methods. (Note that a literature survey is not the same as a literature review. A literature survey, which is a type of primary research, is a systematic and thorough examination of a subject with careful data gathering often designed to test hypotheses. A literature review, which is secondary research, is an examination of the literature related to a problem area with the intent on learning what others have said about it.) See [http://www.isworld.org/surveyinstruments/surveyinstruments.htm](http://www.isworld.org/surveyinstruments/surveyinstruments.htm) for a database of survey instruments and a tutorial on survey research.

   d. **Key informant study.** Examination of several organizations with no experimental design or controls. Information collected from a limited number of individuals (usually 4 to 6). Questions asked of key informants are only about processes, products, organization, etc. that are external to the informant and are not questions about the key informant or the opinions of the key informant.

   e. **Case study.** Examination of one or more organizations with no experimental design or controls. Can use key informant(s). See [http://www.nova.edu/ssss/QR/QR3-3/tellis2.html](http://www.nova.edu/ssss/QR/QR3-3/tellis2.html) for an article on case study methodology.

4. **Subjective/argumentative/conceptual research.** Research that is based more on opinion and speculation than on observation.

Note that in this taxonomy, theorem proof, engineering design, and subjective/argumentative/conceptual research are types of nonempirical research.

If people are involved in methodologies 3a, 3b, or 3c, an approved human subjects protocol is required. See [http://www.sfsu.edu/~protocol/human.htm](http://www.sfsu.edu/~protocol/human.htm) for details of the SFSU human subjects protocol requirements.
Exercise

Select a research article in your field and read it quickly. You do not have to understand the article in depth. Then answer the following questions about the article.

1. What is the main research problem or question investigated by the researcher? State the problem or question in one or two sentences. (If you can find a single sentence or paragraph in the article that identifies the problem or question, note it.)

2. What is the research methodology used by the researcher? List the steps the researcher went through to investigate the problem or question.

3. What is the conclusion the researcher reached about the research problem or question? Summarize the conclusion in one or two sentences.
CHAPTER 5
REPORT WRITING

In general, research does not serve a purpose unless others learn about it. This chapter covers the preparation of the written report of the research and Chapter 6 covers the oral presentation.

Organization

Your report should be divided into chapters covering the topics listed below. The chapter titles listed are generic; you do not have to title your chapters using these titles. In addition, your report can have more or fewer chapters. Still, your report should cover the topics listed. Your chapters should be numbered and each chapter should start on a new page. The typical length of each chapter is shown in parentheses following the generic chapter title. Your chapters do not have to fall within the ranges given; they can be shorter or longer depending on your paper.

Chapter 1: Problem definition and statement (3-6 pages)
Introduction, statement of research problem or question, background information about the problem/question area, explanation of why the problem/question is important, purpose of the project, overview of the primary research methodology, summary of the remaining chapters. Note: You should have a section in this chapter entitled “Research Question”, “Research Problem”, or something similar in which you clearly state your research question/problem. You should also have a section entitled “Research Methodology” or something similar in which you briefly summarize your research methodology. The last section of this chapter should be entitled “Organization of Report” or something similar and it you should give a brief summary of what is included in each of the remaining chapters.

Chapter 2: Literature review and topic development (10-20 pages)
In-depth review of the research problem or question including a review of the literature related to the problem or question. Development of background needed for research. Note: Occasionally this material is covered in two chapters.

Chapter 3: Research and analysis (15-30 pages)
Description of your primary research methodology, statement of your hypotheses or propositions, the data you gathered, your analysis of the data, your results, etc. Note: Sometimes this material is covered in two or more chapters, one chapter for research methodology and one or more chapters for description of the data gathered, analysis of the data, and the results.

Chapter 4: Summary, discussion, conclusion, implications, and recommendations (3-5 pages)
Summary and discussion of your results. Your conclusion related to your research problem or question and its implications. Recommendations for further research
(optional). Note: You should have a section in this chapter entitled “Summary” or something similar in which you summarize your research. You should also have a section entitled “Conclusion” or something similar in which you clearly state your conclusion as it relates to the research question or problem that you stated in Chapter 1.

References (1-3 pages)
List of all references used in your research.

Appendices (0-50+ pages)
Survey instruments, program code, or any other items that are part of your research but that do not belong in the body of your report.

In general, the maximum number of chapters should be six although in rare circumstances it can be more.

Length

There is no prescribed length for your report. Typically, reports range from 40 to 60 double-spaced pages, including all diagrams and tables but not counting the title and other front pages or any appendices. Reports are sometimes as short as 25 to 30 pages or as long as 100 or more pages. Very short reports have a tendency to be incomplete unless they are very well written; very long reports have a tendency to be unnecessarily overdone. The page length ranges given in the list of chapters above are guidelines, not absolutes.

Content

The following are general comments on the content of your report:

1. Your report should clearly and completely state your research problem or question. One of the biggest mistakes that some students make is not making it absolutely clear what they are doing, that is, what their research problem or question is.
2. Your report should clearly state your conclusion regarding your research problem or question (that is, the problem solution or question answer). Your report does not have to reach a definitive conclusion about your research problem or question. For example, your conclusion may be that further research is needed (as long as you explain what form that research should take). But your report should reach a conclusion that shows insight into your research problem or question.
3. Your report should provide support for your conclusion. The support comes from your secondary research (e.g., literature related to your problem or question), your primary research (i.e., data that you gathered and analysis of the data), logical arguments, and other forms of support, depending on your research methodology.
4. Your report should include adequate material so that someone else can replicate your research. For example, if you do a survey you should include a copy of the survey...
instrument, an explanation of the survey sample (but not the list of people or organizations surveyed), and a description of how the survey was administered.

5. Your report should be written at a level understandable to a person who is knowledgeable in the information systems field but is not necessarily familiar with your particular research problems or questions. Thus, you should not provide basic information about information systems (assume the reader knows this information), but you should provide relevant information about your problem area.

**Plagiarism**

Most papers use material from other sources. This material could be direct quotes, summaries of ideas, diagrams, and similar work by other authors. This practice is acceptable and common provided it is done correctly and the source is identified in the paper. Using other material incorrectly or not identifying the source is plagiarism and it must be not be done.

To plagiarize is to use the words, ideas, or images of someone else in your report as if they were your own words or ideas. You plagiarize when you copy a sentence or paragraph from an article without putting it in quotes and indicating the source. You plagiarize when you cut and paste something from the Web without putting it in quotes and inditing the source. You plagiarize when you rewrite a sentence from an article in different words without indicating the source. You plagiarize when you summarize the ideas in an article without indicating the source. You plagiarize when you copy an illustration from an article without indicating the source. These cases are just a few examples of the many forms that plagiarism can take. In order to avoid plagiarism you must use any material from another source in the proper way and you must identify the source of the material.

Plagiarism must be avoided in writing your report. Plagiarism is not acceptable because it is unethical to use someone else's work as your own. It is a violation of academic integrity, which means that what you write is your own and not someone else's work, and it is disrespectful of the work of others. When it is discovered, you and your paper will lose credibility. Plagiarism also can be illegal if the copied material is copyrighted. Finally, plagiarism is grounds for disciplinary action at the University. (Refer to the section in the University Bulletin titled "Student Conduct/Discipline" for an explanation of the penalties that can be imposed on students who plagiarize.) Do not plagiarize!

Most students do not plagiarize purposefully. Students sometimes are careless, however, in keeping track of what they take from another source and what the source is. Whenever you write something down from another source, put it in quotation marks and write down the source. Then you will be less likely to plagiarize the material. Be very careful if you

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cut and paste something from the Web. Be sure to put it in quotes and note the Web site from which you got it.

There are three main sources of information in your report:

1. Your own material. This material includes your own ideas, thoughts, data, and analysis stated in your own words. Using this material is not plagiarism.
2. Common knowledge. This material is information that knowledgeable people in the field are likely to know, such as knowing that a computer contains a CPU. Using this information is not plagiarism, even if you have to look it up in a reference such as a dictionary or textbook, as long as you state it in your own words. If you use someone else's words or way of expressing the information without indicating the source, however, it is plagiarism.
3. Someone else's material, thoughts, expressions, illustrations, or data. This material includes any facts, ideas, diagrams, or wording that does not fall into either of the two previous categories. You can use this material, but if you do not properly present it and identify its source, you have plagiarized.

You can present material that is not your own and avoid plagiarism in several ways, including the following:

1. You can quote the material directly. You must either put the material in quotation marks or set it off in a separate, usually indented paragraph. You must not change any wording or spelling, even if it is wrong. If the material is an illustration, table, or similar item, you do not put it in quotation marks; you set it off separately. You can also “quote” an illustration by using it exactly as it appears in the original document.
2. You can paraphrase the material. Paraphrasing involves following the original more closely, sometimes sentence by sentence, but in your own words. Note that you cannot just rewrite the material, substituting synonyms for certain words. You must either quote directly or rewrite completely. You can also “paraphrase” an illustration, table, or similar item by following the original closely, but using your own approach to display it.
3. You can summarize the material. You can extract the central ideas or condense the material and express it in your own words. You can also “summarize” an illustration, table, or similar item by extracting the central content of the item and using your own approach to display it.

The Appendix contains examples of acceptable (not plagiarized) and unacceptable (plagiarized) use of material.

No matter which of these methods you use, you must identify the source of the material. If you do not give the source, you have plagiarized. The next section explains how to identify sources.
Identifying Sources

You *must* identify the source of any material you use at the point where you use it in the body of your report. This requirement applies whether the material is *quoted*, *summarized*, or *paraphrased*. If you use the same material several times in a report, you must identify the source *each* time you use it. You must give the complete source, including the author, title, and other information needed to identify the source. You should also give the page number where you found the material you are using, if appropriate. This information about the source of material is often called a "citation" or you say that you "cite" the source. If you do not cite the source of material you use, even if you put the material in quotation marks, it is plagiarism.

Each source that you use also must be listed in the references, which come at the end of your report. Each book, article, Web site, or other item should appear in the references once, even though you may have used it more than once as a source in your report. You do not give page numbers of specific material in the references. Thus, if you used material from several different pages of a book, you do not list these page numbers in the references, although you do list the specific page numbers in the body of your report when giving the source of material you used. (If a source is an article in another publication, you give the page numbers of the complete article in the references.)

To summarize:
- *Each time* you use material from another source, you *must* identify the source in the body of your report.
- Each source *must* also be listed *once* in your references at the end of your report.

Note: You should have a list of references and not a bibliography. A list of references gives only the sources used in the report. A bibliography gives other references that you did not use and serves as a more complete list of sources for information on the subject.

You can use one of two main styles for identifying sources in your report. These are described in Turabian (see Annotated Bibliography at the end of this Handbook). One style uses notes (footnotes or endnotes) and the other style uses parenthetic references. You should decide on one style and use it throughout the report. You should not change styles from one chapter to the next or within a chapter. Each style for identifying a source uses a different style for its listing in the references. Be sure to use the correct style for both.

The following is a summary of the styles you can use for identifying sources. Refer to Turabian for details of these styles. Whichever style you decide to use should be used throughout your report. One of the basic principles of style is to be consistent.

1. Notes style. You can use footnotes. Because word processing software has footnoting capabilities, footnotes are fairly easy to use. Any source identified in a footnote or endnote must also be listed in the references at the end of your report.
Example:

Text in body of report:
  Smith said "Computers are great."¹

Footnote at bottom of page at end of report:

Entry in list of references at end of report:

2. Parenthetic reference style. You can list the author (unless it is given in the text), year of publication, and, possibly, the page number in parentheses.

Example:

Text in body of report:
  Example 1: One author said, "Computers are great." (Smith 2010, 25)
  Example 2: Smith (2010, 25) said, "Computers are great."

Entry in list of references at end of report:

Note: If Smith wrote two articles in your references in 2010, they are identified as 2010a and 2010b in the sources and the references. If more than one Smith wrote articles in your references, then you need to include the author’s initial or first name, e.g., J. Smith (2010, 25).

This Handbook uses the notes style.

You must also identify the source of any illustration (figure, diagram, photograph, etc.), table, or similar item taken from another source. You can include the source using the note or parenthetic reference style. Usually, the note number or parenthetic reference is in the item's caption. You must also list the source in the references.

Identifying sources found on the Internet and World Wide Web creates a special problem. You should give as much information about the source as you can in the same style as you use for other sources (i.e., author, title of article, title of publication, date of publication, page numbers, etc.). Following this information, you should give the information necessary to locate the source on the Internet. For example, you should give the URL if the source came from a Web site. You should also give the date that you accessed the source because information on the Internet changes often. The URL should be put in angle brackets after the other source information (author, title, etc.), followed by the date of access in parentheses. Do not just give the URL, however; give as much information as you can as you would for a print document. For example, if *New Era Computer Magazine* where you found Smith's article were only an online publication and you accessed it on March 1, 2010, the footnote would be as follows:

The entry in the list of references at the end of the paper would also list the URL and the access date. If a source is published both online and in print, you should give the footnote and reference list entry as if it were the print version, even if you found it online.

When to Quote

A common mistake is to use too many quotations. In general, fewer quotes are better than more quotes. A common rule of thumb is that quotations should be no more than 15% of your paper, although that is a lot and more likely to occur in research in other fields such as the humanities. A better rule for business research is a maximum of 5% of a paper should be quotes.

Quotations should be used only when they will have an impact on the reader. Do not quote because you are having difficulty writing something in your own words. Work on your writing and only quote a small amount of material to add impact. Quotations should be used to support arguments and should not be used as arguments by themselves.

The most common place where quotes are used is in your literature review. In general your literature review should synthesize the literature in your own words and only use quotes for emphasis, not as substitutes for your own words.

Always introduce or in some other way make it clear that the words in a quote are someone else’s and not your own. Do not just insert a quotation, even if it has a footnote or parenthetic reference, without saying that it is attributed to someone else. For example, do not write

“Computers are great.” (Smith 2010, 25)

Instead write

Smith said, “Computers are great.” (Smith 2010, 25)

Although both examples have correct parenthetic references, the second example makes it clear that the quote does not belong to you and tells the reader who said it before the reader reads the quote.

Grammar

You should be careful to use correct English grammar throughout your report. If you have any questions about grammar you should consult a good grammar reference book. You may wish to have someone else read your report to help identify grammar errors. Here are a few comments on grammar:

1. Do not use first person singular (I, me, my, etc.) to refer to yourself in the report. Write the sentence in another way, preferably in active voice although you can also

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use passive voice. For example, do not say “I received 125 responses to my questionnaire.” Instead you can say “Respondents returned 125 questionnaires” (active voice) or “One-hundred twenty five questionnaires were returned” (passive voice).

2. Do not refer to the reader in the second person singular (you, your, etc.). You can refer to the reader in an indirect way. For example, do not say “You can use the guidelines to design a database.” Instead, you can say “Database analysts can use these guidelines to design a database.” (This Handbook refers to the reader in the second person singular intentionally because it was written in an informal style. This style, however, is not appropriate for your report.)

3. You can use first person plural (we, our, etc.) to refer to the yourself and the reader of the paper together. For example, you can say “We can see from this figure that …” It is best, however, to avoid all personal pronouns if possible. For example, it would be better to say “This figure shows that …”

Style

Your report must follow the style described in the "Guidelines for the 895 Research Project in Business", available from the graduate business office Web site. Be sure that all the elements required in that document are part of your report, including the Title page, Certification of Approval page, and Abstract page. Be sure to follow the style exactly with regards to margins, spacing, etc. Your report should be free of spelling and grammar errors.

Beyond the style given in the Guidelines, your report must follow the style described in Turabian. Here we describe several aspects of style. Refer to Turabian for details of these and other aspects of style.

Each chapter should start on a new page and should have a chapter number and a chapter title. (The word CHAPTER before the chapter number is optional.) All chapter titles should use one style, all main section headings within a chapter should use a different style that is less prominent than the chapter heading style, all subsection headings should use a third style that is less prominent than the main section heading style, etc. Although alternative styles can be used, a suggested style based on Turabian is:

- Chapter title: all capitals, lightface, centered
- Main section headings within a chapter: mixed case, boldface, centered
- Subsection headings within a section: mixed case, underlined, left justified
- Sub-subsection headings within a subsection: sentence case, italics, indented, ending with a period, followed by first sentence of paragraph

You do not have to use this style for headings but you must select a style and use it consistently throughout the report.
All figures (diagrams, illustrations, etc.) and tables should be numbered and have captions. Figures can be numbered consecutively from the beginning of the report (e.g., Figure 1, Figure 2, etc.) or they can be numbered consecutively within a chapter as long as you give the chapter number as part of the figure number (e.g., figures in chapter 2 could be numbered Figure 2.1, Figure 2.2, etc.) Tables should be numbered in a similar style as figures but should follow their own sequence.

All figures and tables should be referred to in the body of your report; do not include a figure or table without indicating in your text where the reader should look at it. (For example, "See Figure 5." or "Table 5 shows that ...")

Each figure or table can be placed on a separate page (without any text on the page) that comes immediately after the page in which you refer to the item. Alternatively, you can put a figure or table on the same page as other text, as long as it comes after your reference to it. In general, it is best to place these items at the top or bottom of a page that has other text on it, not in the middle of the page with text above and below.

Title and Abstract

Your report title is very important because it gives the first clue of what your report is about. The title should be descriptive of your report's topic and not be cute or clever.

The abstract of your report should be about three-quarters of a page long. It should state your research problem or question, briefly describe your methodology, and state your conclusion. Normally it should not cover any of your literature review. See the Guidelines for details of what should be in the abstract.

Copies Needed

You should plan on having at least four copies of your final report: one copy to turn in to the graduate business office, one for your project supervisor, one for your second reader, and one for yourself.

Exercise

Select a research article in your field and answer the following questions about it. Do not read the article in its entirety.

1. What are the main sections or chapters of the article?
2. Is material from other sources quoted, summarized, or paraphrased in the article?
3. What style is used for identifying sources in the article?
4. What style is used for references at the end of the article?
5. How are different types of headings distinguished in the article?
6. Read only the title and the abstract of the article. Write three sentences that summarizes what the article is about. The first sentence should state the research problem or question. The second sentence should describe the methodology. The third sentence should give the conclusion of the article. If you cannot write all these sentences from the title and the abstract, explain what is missing.
CHAPTER 6

ORAL PRESENTATION TECHNIQUE

The purpose of the oral presentation is to inform others about the research and to allow others to ask questions about it. This chapter gives hints on making a good oral presentation.4

**Organization**

Your oral presentation can be organized in several ways, although it should have the following main parts. The typical time spent on each part is shown in parentheses.

*Introduction (1-3 minutes)*
You should start by stating clearly and completely your research problem or question and providing an explanation of its meaning and importance. You may wish to give a little background about your problem area before stating your problem or question.

*Body (10-12 minutes)*
You should explain your research methodology, discuss your analysis, and give your results. You should give a brief review of the most relevant literature only if it is essential for understanding what you did.

*Conclusion (1-2 minutes)*
You should end by stating the conclusion that you reached about your research problem or question. You may wish to summarize your results as part of your conclusion.

Most of your presentation should be devoted to the body. The introduction should be brief and the conclusion should be just long enough to cover the important points.

**Content**

The following are general comments on the content of your oral presentation:

1. One of the most common mistakes in an oral presentation is not stating the research problem or question clearly at the beginning of the presentation.
2. Another common mistake is spending too much time on background topics. The audience is normally not interested in these topics and wants to hear about your primary research and your results. Only cover the minimal amount of background that is absolutely necessary to understand your primary research.

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4 Some of the ideas in this chapter were adapted from *How to make better ... Presentations*, Matrix Computer Graphics, 1987.
3. You cannot cover everything in your written report in your oral presentation. You must select the most important parts of your report and cover only them. You will have to balance depth of coverage with breadth of coverage.

4. The level of the presentation should be appropriate for an informed audience in the information systems field.

5. Your presentation should be logically organized. It should be very clear to the audience why each topic follows from the previous one.

6. You should not make any errors during your presentation. You must know your topic very well and be well prepared.

**Length**

You will have about 20 minutes for your oral presentation. You should plan on talking for no more than 15 minutes, leaving five minutes for questions at the end. People generally talk at about 100 to 150 words per minute. This means your oral presentation should be about 1500 to 2250 words. If you run too long, you will be interrupted and asked to finish in 1 minute. You should practice your presentation to be sure you will not run too long.

When your turn for presenting comes, you will be given time to get your materials organized. There will be a table with a podium and a computer with a screen projector at the front of the room. You can use these as you wish. If you need other equipment such as an overhead projector you will have to request it in advance. If you plan to use a computer for your presentation, you should test your materials before the presentation with the computer that will be used. You can use your own laptop computer and connect it to the screen projector if you wish. After you have gotten organized, you will be introduced to the audience and the title or topic of your project will be given. Then you can start your presentation. At the end of your presentation you should ask if there are any questions.

**Notes**

You should not read your notes during your presentation. It is best if you do not use notes at all and only refer to your visual aids. You may feel more comfortable, however, having notes, and if you do, it will not be held against you. Your notes should be in outline form and not be the text of your presentation.

**Visual Aids**

Visual aids are an important part of your presentation, so you should put considerable thought into them. You can use PowerPoint slides and other visual aids that you feel are appropriate. The following are general comments on visual aids:
1. Your visual aids can contain many different types of items, including, but not limited to, the following:
   a. Text to list key points
   b. Tables to organize data into categories
   c. Charts to summarize or show relationships
   d. Diagrams to show schematic arrangements
2. Be sure that your visual aids use a font that is large enough and dark enough to be read from the back of the room.
3. If a visual aid is particularly detailed, you should make copies of it and hand it out to the audience before beginning your presentation. Another technique you can use with a detailed visual aid is to make visuals of parts of it and display each part separately. You could start or end the sequence with a visual aid that links all parts together, or have a handout that links the parts together.
4. Do not cover too many points on a visual aid; a maximum of five points per visual aid is about right. Do not provide detailed text explanations on a visual aid; your oral comments should provide the detailed explanations.
5. You should have a title visual at the beginning with the title of your report and your name. You may wish to end your presentation with the same title visual or have a visual that asks for questions.
6. Always refer to a visual aid during your presentation by pointing at it, identifying it (for example, "This slide shows the results of the analysis."), or in some other way making it clear that the audience should read it at a particular time. Do not show a visual aid and expect the audience to know when to read it. (There are some exceptions to this advice, such as your title visual and visuals that only contain bullet points that correspond to the points of your presentation.)
7. Do not stand in front of your visual aids; stand to the side so they are visible to the audience.
8. You may use a pointer to point to critical parts of a visual aid. For overhead transparencies, you can point to the screen with a pointer, or you can use a pen or pencil to point to the transparency on the projector, thus casting a shadow on the screen.
9. The number of visual aids you have depends on your topic. In general, the fewer the better. Each visual aid must be shown long enough for the audience to thoroughly read it and understand it. You do not want to be going through visual aids so rapidly that no one has time to understand what you are showing. As a general rule, you should have no more than one visual aid per minute, including your title visual. This means you should have no more than 15 visual aids. A better rule is no more than one visual aid for every minute and a half. This means a maximum of 10 visual aids. You may have one more visual at the end asking for questions from the audience. If you have too many visual aids then it is likely that your presentation will run long and you will be cut off without finishing it.
10. Have your visual aids organized and ready to go. You should not fumble with your visual aids during your presentation.
11. You can do a computer demonstration during your presentation if you have the time. Try to make the screen image as large as you can so that it will be readable by the audience. Be sure that the demonstration works with the computer you will be using.
Also be sure to have the software ready to go so you can move directly into your demonstration at the appropriate point in your presentation. For each minute spent on a computer demonstration, you should subtract 1 from the maximum number of visual aids.

**Delivery**

Your oral presentation is a formal presentation and you should conduct yourself accordingly. You should wear business attire. (Casual business attire is acceptable.) You should not make jokes during your presentation. The following are some general comments on delivery:

1. Speak loud enough to be heard in the room but do not yell. Speak at a moderate speed – not too fast nor too slow.
2. Try to avoid using verbal distractions such as "ah" and "you know".
3. Try to avoid physical distractions or mannerisms, such as scratching your head or leaning on the table. You do not have to be inanimate, however; you can gesture as long as it is appropriate and not overdone.
4. Face the audience or stand at a 45 degree angle to the audience; do not stand sideways (90 degree angle) or with your back to the audience. Be sure to stand up straight and have good posture. Do not stand with your hands in your pockets.
5. You should make eye contact with the people in the room. A good practice is to try to have eye contact with each person in the room at least once during your presentation. Although in some cultures eye contact may not be the norm, it is important in American business.
6. A formal presentation is not the same as a class presentation given by a professor. During a class presentation, a professor does a number of things to enliven and motivate the class, including telling stories and jokes, and providing motivation for why the topic is important. You should not use a class presentation or your favorite professor as a model for your presentation. A formal presentation does not have to be entertaining or motivational (although it should be interesting).
7. If you have a video camera, you should tape yourself giving your presentation, and then play back the tape to critique yourself.

**Dealing with Nervousness**

First, remember that it is normal for you to be nervous; the audience will not think less of you because you are nervous. Almost everyone who gives a presentation like this one is nervous. Most everyone in the audience, including the faculty, has been be in the same situation before and has been nervous.

Before you start, take time to gather your thoughts; don’t just start talking as soon as you get to the front of the room. Take a deep breath, relax, look around the room, and only start when you are ready.
The best way to overcome nervousness is to be confident in what you are saying. Be sure you thoroughly understand what you are going to talk about. This understanding does not mean just knowing your presentation; it also means knowing everything you can about your topic. If you are well prepared and know your topic, then no one can ask you a question you will not be able to answer, which will give you confidence and, hopefully, make you less nervous.

**Responding to Questions**

You may get several types of questions at the end of your presentation. Respond to all questions courteously and as completely as you can. The following are some of the types of questions and how to respond to them:

1. Questions that indicate skepticism. For example, a questioner may not agree with your analysis or conclusions. Respond to this type of question by restating your argument or proof.
2. Questions that indicate a misunderstanding. For example, a questioner may not understand what you said. Respond to this type of question by repeating your explanation or giving the explanation in a different way. You may have to give more detail on the subject of the question in order to clarify it.
3. Questions that challenge your understanding. For example, a questioner may want to see how well you know the subject. This type of question is likely to be asked if you made an error during your presentation but it can occur at other times. Respond to this type of question by answering with what you know. If the question is outside the scope of your project, you should state so and only try to answer it if you are sure you know the answer.
4. Questions that ask for further information. For example, a questioner may want to know more about some part of your presentation. Respond to this type of question with as much as you know.
5. Questions that are actually statements of the questioner's ideas or opinions. For example, a questioner may express his or her ideas about your research and ask what you think about it. Respond to this type of question with what you think about the idea or opinion, but do not get into an argument with the questioner. This type of question, as well as others, can lead to discussion among members of the audience.

**Exercise**

Write a one page (double-spaced) outline of your oral presentation. Also write a one-sentence description of each of your visual aids. Number the aids and add the numbers to your outline to indicate where you will use each visual aid. Can you give your presentation from this outline and these visual aids?
APPENDIX

PLAGIARISM EXAMPLES

This appendix gives examples of the use of material from another source that is not plagiarism and that is plagiarism.

Original Material

Consider the following original material from J. Smith, “The Greatness of Computers,” New Era Computer Magazine, January 2010, 25-28. Assume that the information and ideas in this material is not common knowledge and thus must be used appropriately and cited properly.

Computers are great. In fact, they are so great that they are outstanding. They go beyond outstanding, however, to be stupendous. Put simply, they are the best thing going. The graph in Figure 3 shows the increase of their greatness (G) over time (T):

![Graph showing increase of computer greatness over time]

Figure 3. The change of computer greatness over time

Acceptable Use of Material without Plagiarism

All the following are acceptable ways to use this material in a paper and are not plagiarism.

1. Quote the material directly in a separate indented paragraph without quotation marks. This approach should be used when the amount of material quoted is more than a few lines.
   Example:
   Many authors have commented on the greatness of computers. In a recent article Smith (2010, 25) said:
   Computers are great. In fact, they are so great that they are outstanding. They go beyond outstanding, however, to become stupendous. Put simply, they are the best thing going. This is just one of a number of authors who have used the greatness concept when referring to computers.
2. Quote part of the material within the text in quotation marks. This approach should be used when the amount of material is not extensive.
Example:
   Many authors have commented on the greatness of computers. In a recent article Smith (2010, 25) said, “Computers are great.” Furthermore he said, “they are the best thing going.” This is just one of a number of authors who have used the greatness concept when referring to computers.

3. Paraphrase the material. Rewrite the material in your own words following the original closely.
Example:
   Many authors have commented on the greatness of computers. In a recent article Smith (2010, 25) expressed his feelings about their greatness. He feels that they fall into a category of greatness that he calls outstanding. He even feels that outstanding is not enough and refers to them as stupendous, although in the end he reverts to the old "best thing going" cliché in referring to them. This is just one of a number of authors who have used the greatness concept when referring to computers.

4. Summarize entirely in your own words.
Example:
   Many authors have commented on the greatness of computers. In a recent article Smith (2010, 25) described how he felt. He explained that computers go beyond mere greatness to higher categories that he called outstanding, stupendous, and, to use his words, “the best thing going.” This is just one of a number of authors who have used the greatness concept when referring to computers.

Unacceptable Use of Material with Plagiarism

All the following are unacceptable ways to use this material in a paper and are plagiarism.

1. Use any of the author’s word exactly without using quotation marks and referencing Smith and his article even if you use some of your own wording.
Example:
   It is clear that computers are great. In fact, they are outstanding. For me they go beyond outstanding to become stupendous. To say the least, they are the best thing going.

2. Use any of the author’s words exactly in quotation marks or set off in a separate indented paragraph without reference to Smith and his article.
Example:
   Many authors have commented on the greatness of computers. For example, one author said, “Computers are great.” Furthermore, “they are the best thing going.”
This is just one of a number of authors who have used the greatness concept when referring to computers.

3. Use any of the author’s words exactly without putting them in quotation marks or setting them off in a separate indented paragraph, even if you have included the citation.
Example:
Many authors have commented on the greatness of computers. In a recent article Smith (2010, 25) said that computers are great. Furthermore he said, they are the best thing going. This is just one of a number of authors who have used the greatness concept when referring to computers.

4. Paraphrase or summarize the words without providing a citation.
Example:
It is clear that computers are great. In fact, they are so great that we can say that they are outstanding. For some, they are even greater than outstanding and fall into the category of stupendous. Putting it all together, they are the best thing going.

Acceptable Use of Illustrative and Similar Material without Plagiarism

Illustrative material (graph, chart, diagram, figure, photograph, etc.), tables, or similar items from another source can be used as long as a proper citation is given. The material is normally set off from the other text. No quotation marks are used, even if the caption is the original caption from the source. If you use illustrative material from another source and do not cite the source, it is plagiarism.

1. Use the material without modification and include the citation in the main text.
Example:
The following diagram shows how Smith (2010, 25) viewed the change in computer greatness (G) with the passage of time (T):

```
G

T
```

2. Use the material without modification and include the citation in the caption of the illustration. The caption can be the original caption from the source or your own caption.
Example:
Figure 5 shows how computer greatness has changed over time.

![Graph showing the change of computer greatness (G) over time (T). (Smith 2010, 25)](image)

3. Use part of the material or modify it in some way to better fit your needs. A citation is still required. It can be in the main text or in the caption. Example:

Figure 6 shows how computer greatness has changed in recent years.

![Graph showing the change of computer greatness in recent years. [Adapted from (Smith 2010, 25)](image)

This book is a good reference on business research methodology.


These two articles from MediaNet contain excellent advice about oral presentations. They are available at the MediaNet web site: www.medianet-ny.com.


This little book is an essential source of information about English writing style. A classic.


These three books by Tufte are excellent references on the visual representation of information.


This book is a standard reference on style for student papers.
REFERENCES


