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Systems Analysis and Design, 9e

# Information Gathering: Interactive Methods



# Objectives

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- Recognize the value of interactive methods for information gathering.
- Construct interview questions to elicit human information requirements and structure them in a way that is meaningful to users.
- Understand the purpose of stories and why they are useful in systems analysis.
- Understand the concept of JAD and when to use it.
- Write effective questions to survey users about their work.
- Design and administer effective questionnaires.



# Interactive Methods to Elicit Human Information Requirements

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- Interviewing
- Joint Application Design (JAD)
- Questionnaires

# Major Topics

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- Interviewing
  - Interview preparation
  - Question types
  - Arranging questions
  - The interview report
- User Stories
- Joint Application Design (JAD)
  - Involvement
  - Location
- Questionnaires
  - Writing questions
  - Using scales
  - Design
  - Administering



# Interviewing

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- Interviewing is an important method for collecting data on human and system information requirements
- Interviews reveal information about:
  - Interviewee opinions
  - Interviewee feelings
  - Goals
  - Key HCI concerns



# Interview Preparation

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- Reading background material
- Establishing interview objectives
- Deciding whom to interview
- Preparing the interviewee
- Deciding on question types and structure



# Question Types

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- Open-ended
- Closed



# Open-Ended Questions

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- Open-ended interview questions allow interviewees to respond how they wish, and to what length they wish
- Open-ended interview questions are appropriate when the analyst is interested in breadth and depth of reply





# Advantages of Open-Ended Questions

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- Puts the interviewee at ease
- Allows the interviewer to pick up on the interviewee's vocabulary
- Provides richness of detail
- Reveals avenues of further questioning that may have gone untapped



# Advantages of Open-Ended Questions (continued)

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- Provides more interest for the interviewee
- Allows more spontaneity
- Makes phrasing easier for the interviewer
- Useful if the interviewer is unprepared



# Disadvantages of Open-Ended Questions

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- May result in too much irrelevant detail
- Possibly losing control of the interview
- May take too much time for the amount of useful information gained
- Potentially seeming that the interviewer is unprepared
- Possibly giving the impression that the interviewer is on a “fishing expedition”

# Closed Interview Questions

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- Closed interview questions limit the number of possible responses
- Closed interview questions are appropriate for generating precise, reliable data that is easy to analyze
- The methodology is efficient, and it requires little skill for interviewers to administer



# Benefits of Closed Interview Questions

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- Saving interview time
- Easily comparing interviews
- Getting to the point
- Keeping control of the interview
- Covering a large area quickly
- Getting to relevant data

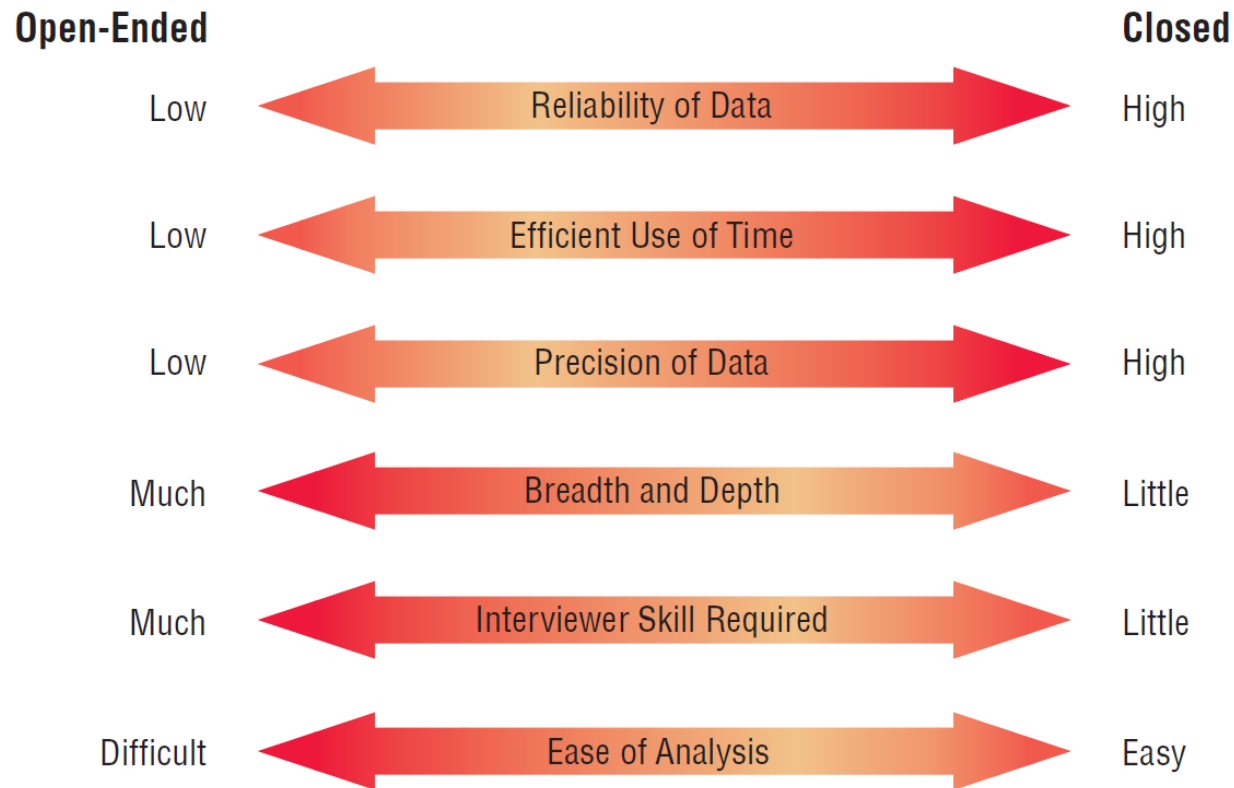


# Disadvantages of Closed Interview Questions

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- Boring for the interviewee
- Failure to obtain rich detailing
- Missing main ideas
- Failing to build rapport between interviewer and interviewee

# Attributes of Open-Ended and Closed Questions (Figure 4.5)



# Bipolar Questions

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- Bipolar questions are those that may be answered with a “yes” or “no” or “agree” or “disagree”
- Bipolar questions should be used sparingly
- A special kind of closed question



# Probes

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- Probing questions elicit more detail about previous questions
- The purpose of probing questions is:
  - To get more meaning
  - To clarify
  - To draw out and expand on the interviewee's point
- May be either open-ended or closed

# Arranging Questions

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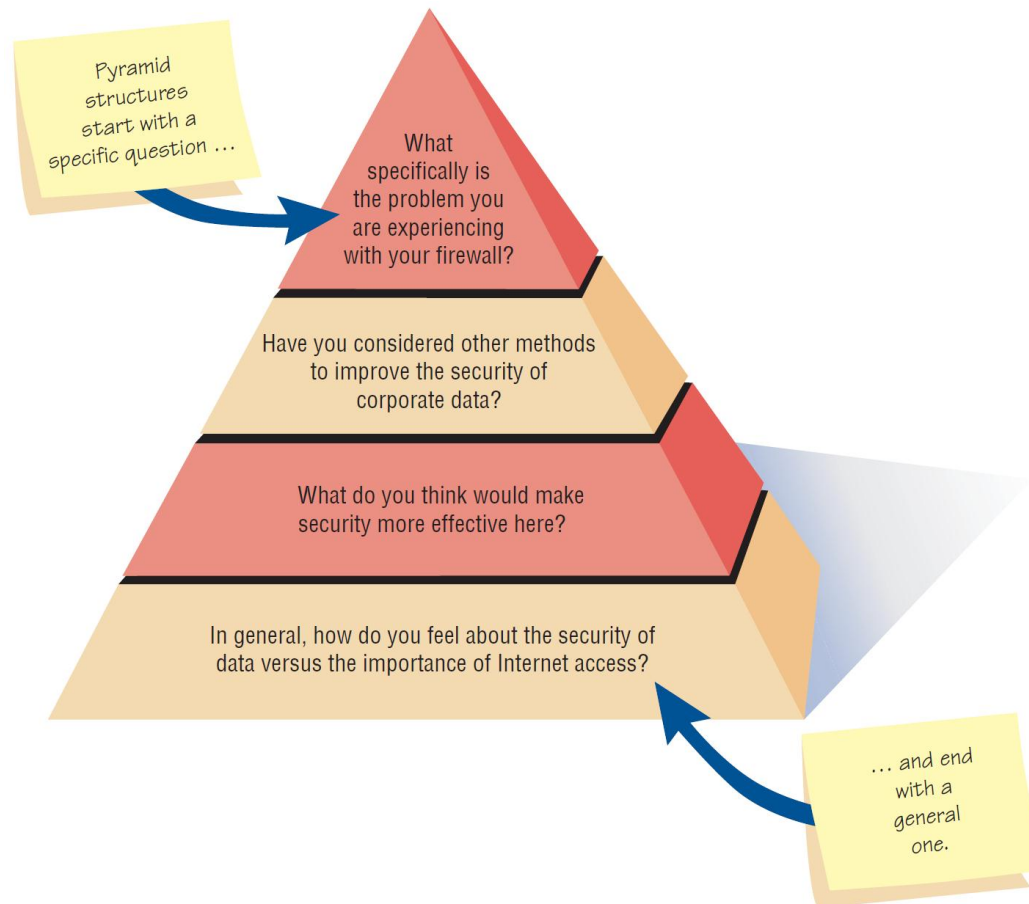
- Pyramid
  - Starting with closed questions and working toward open-ended questions
- Funnel
  - Starting with open-ended questions and working toward closed questions
- Diamond
  - Starting with closed, moving toward open-ended, and ending with closed questions

# Pyramid Structure

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- Begins with very detailed, often closed questions
- Expands by allowing open-ended questions and more generalized responses
- Is useful if interviewees need to be warmed up to the topic or seem reluctant to address the topic

# Pyramid Structure for Interviewing Goes from Specific to General Questions (Figure 4.7 )

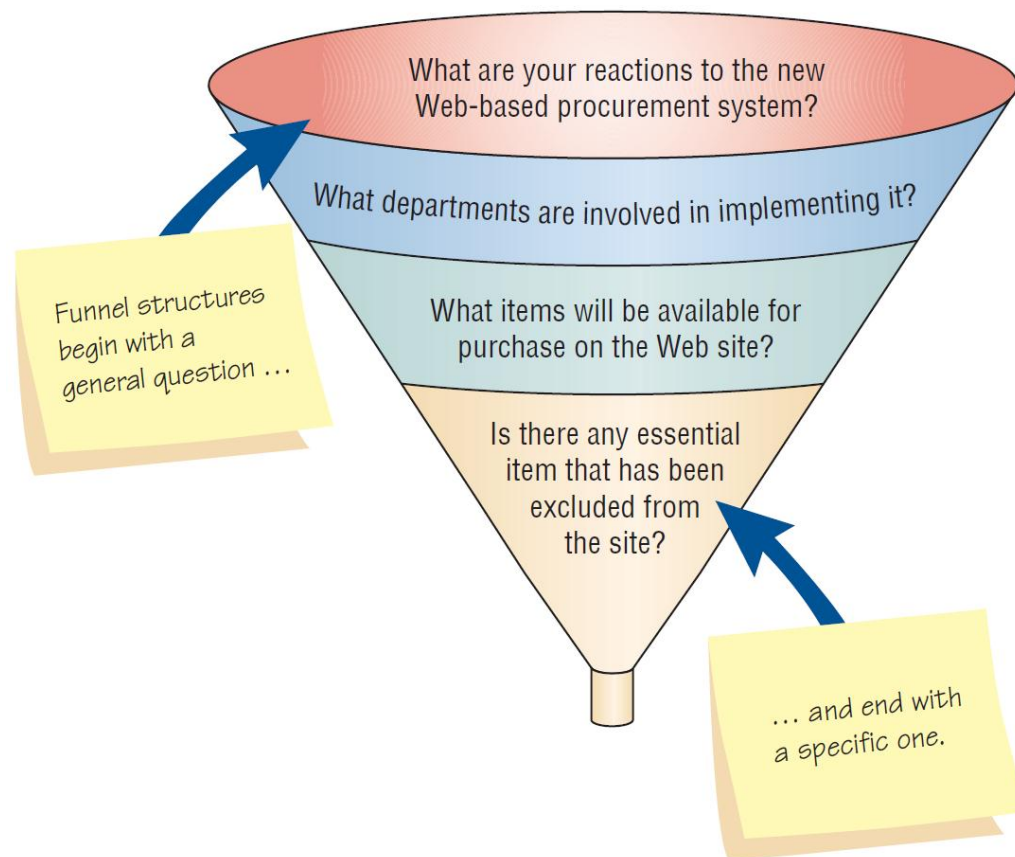


# Funnel Structure

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- Begins with generalized, open-ended questions
- Concludes by narrowing the possible responses using closed questions
- Provides an easy, nonthreatening way to begin an interview
- Is useful when the interviewee feels emotionally about the topic

# Funnel Structure for Interviewing Begins with Broad Questions then Funnels to Specific Questions (Figure 4.8)



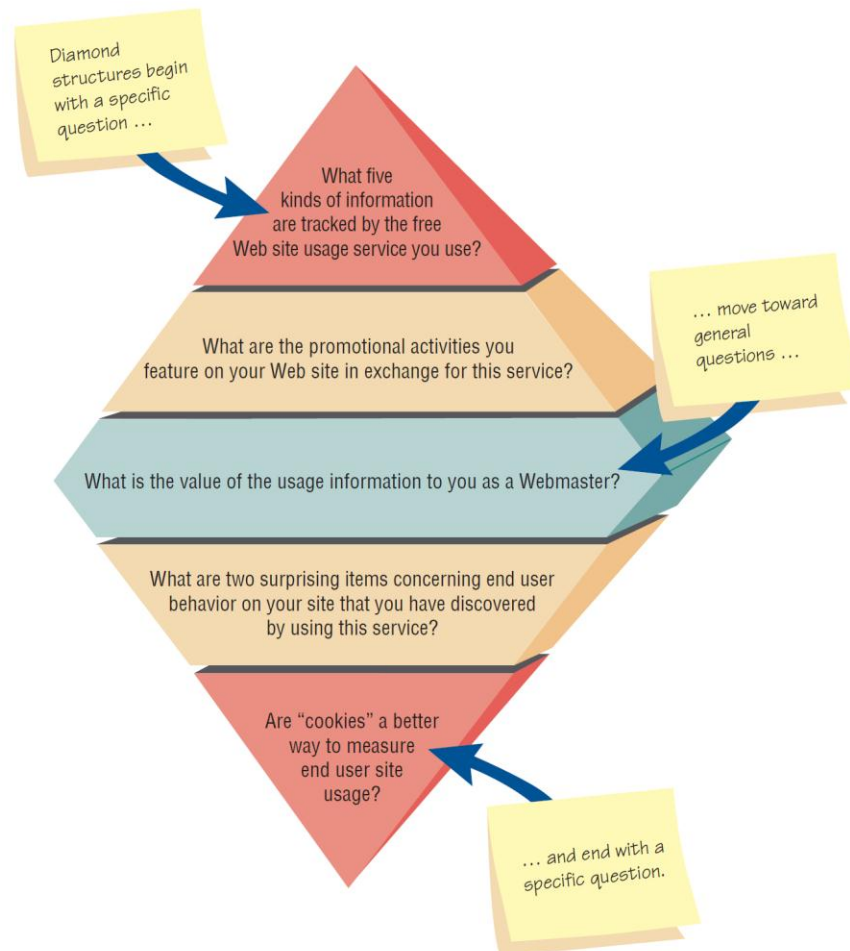


# Diamond Structure

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- A diamond-shaped structure begins in a very specific way
- Then more general issues are examined
- Concludes with specific questions
- Combines the strength of both the pyramid and funnel structures
- Takes longer than the other structures

# Diamond-Shaped Structure for Interviewing Combines the Pyramid and Funnel Structures (Figure 4.9)





# Closing the Interview

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- Always ask “Is there anything else that you would like to add?”
- Summarize and provide feedback on your impressions
- Ask whom you should talk with next
- Set up any future appointments
- Thank them for their time and shake hands.



# Interview Report

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- Write as soon as possible after the interview
- Provide an initial summary, then more detail
- Review the report with the respondent

# Stories

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- Stories originate in the workplace
- Organizational stories are used to relay some kind of information
- When a story is told and retold over time it takes on a mythic quality
- Isolated stories are good when you are looking for facts
- Enduring stories capture all aspects of the organization and are the ones a systems analyst should look for

# Purposes for Telling a Story

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- There are four purposes for telling a story:
  - Experiential stories describe what the business or industry is like
  - Explanatory stories tell why the organization acted a certain way
  - Validating stories are used to convince people that the organization made the correct decision
  - Prescriptive stories tell the listener how to act
- Systems analysts can use storytelling as a complement to other information gathering methods

# Joint Application Design (JAD)

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- Joint Application Design (JAD) can replace a series of interviews with the user community
- JAD is a technique that allows the analyst to accomplish requirements analysis and design the user interface with the users in a group setting



# Conditions That Support the Use of JAD

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- Users are restless and want something new
- The organizational culture supports joint problem-solving behaviors
- Analysts forecast an increase in the number of ideas using JAD
- Personnel may be absent from their jobs for the length of time required



# Who Is Involved

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- Executive sponsor
- IS analyst
- Users
- Session leader
- Observers
- Scribe

# Where to Hold JAD Meetings

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- Offsite
  - Comfortable surroundings
  - Minimize distractions
- Attendance
  - Schedule when participants can attend
  - Agenda
  - Orientation meeting





# Benefits of JAD

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- Time is saved, compared with traditional interviewing
- Rapid development of systems
- Improved user ownership of the system
- Creative idea production is improved

# Drawbacks of Using JAD

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- JAD requires a large block of time to be available for all session participants
- If preparation or the follow-up report is incomplete, the session may not be successful
- The organizational skills and culture may not be conducive to a JAD session



# Questionnaires

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Questionnaires are useful in gathering information from key organization members about:

- Attitudes
- Beliefs
- Behaviors
- Characteristics



# Planning for the Use of Questionnaires

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- Organization members are widely dispersed
- Many members are involved with the project
- Exploratory work is needed
- Problem solving prior to interviews is necessary

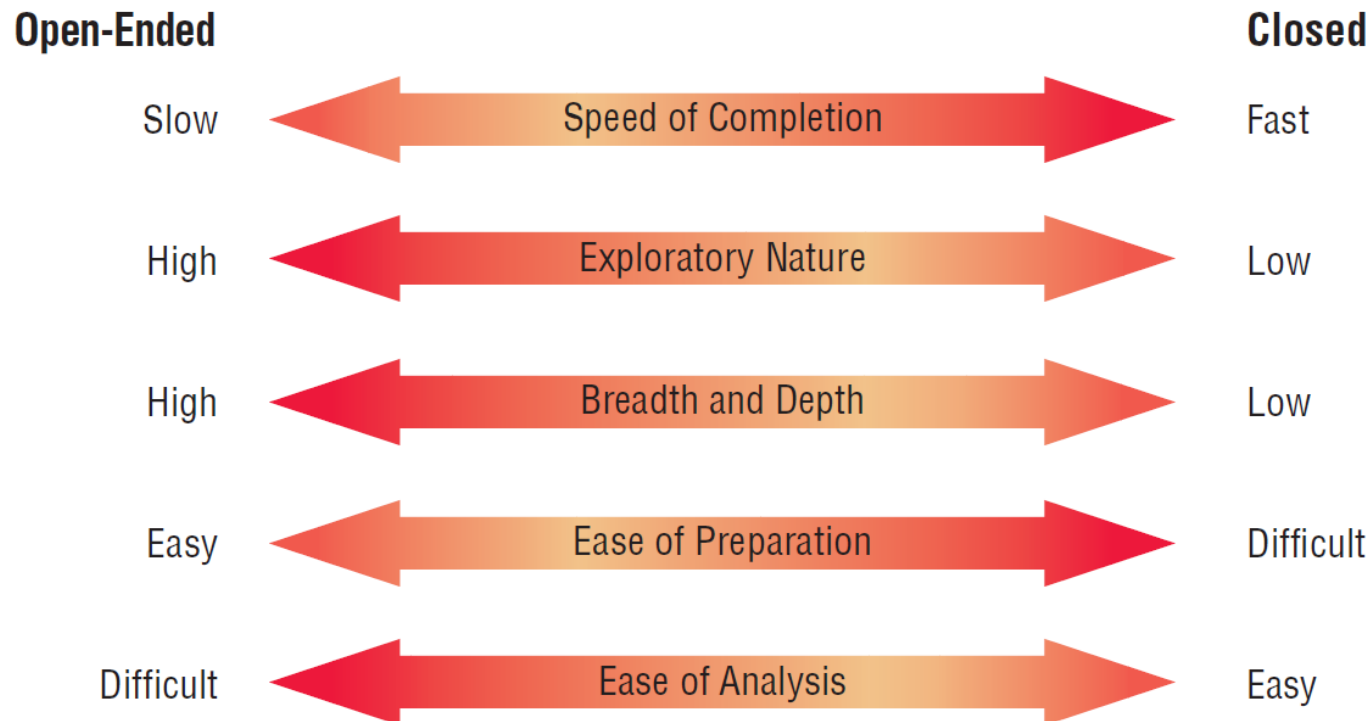
# Question Types

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Questions are designed as either:

- Open-ended
  - Try to anticipate the response you will get
  - Well suited for getting opinions
- Closed
  - Use when all the options may be listed
  - When the options are mutually exclusive

# Trade-offs between the Use of Open-Ended and Closed Questions on Questionnaires (Figure 4.12)



# Questionnaire Language

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- Simple
- Specific
- Short
- Not patronizing
- Free of bias
- Addressed to those who are knowledgeable
- Technically accurate
- Appropriate for the reading level of the respondent



# Measurement Scales

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- The two different forms of measurement scales are:
  - Nominal
  - Interval



# Nominal Scales

- Nominal scales are used to classify things
- It is the weakest form of measurement
- Data may be totaled

What type of software do you use the most?

1 = Word Processor

2 = Spreadsheet

3 = Database

4 = An Email Program

# Interval Scales

- An interval scale is used when the intervals are equal
- There is no absolute zero
- Examples of interval scales include the Fahrenheit or Centigrade scale

How useful is the support given by the Technical Support Group?				
NOT USEFUL			EXTREMELY	
AT ALL			USEFUL	
1	2	3	4	5

# Validity and Reliability

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- Reliability of scales refers to consistency in response—getting the same results if the same questionnaire was administered again under the same conditions
- Validity is the degree to which the question measures what the analyst intends to measure



# Problems with Scales

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- Leniency
- Central tendency
- Halo effect

# Leniency

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- Caused by easy raters
  - Solution is to move the “average” category to the left or right of center

# Central Tendency

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- Central tendency occurs when respondents rate everything as average
  - Improve by making the differences smaller at the two ends
  - Adjust the strength of the descriptors
  - Create a scale with more points



# Halo Effect

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- When the impression formed in one question carries into the next question
- Solution is to place one trait and several items on each page



# Designing the Questionnaire

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- Allow ample white space
- Allow ample space to write or type in responses
- Make it easy for respondents to clearly mark their answers
- Be consistent in style





# Order of Questions

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- Place most important questions first
- Cluster items of similar content together
- Introduce less controversial questions first







# Administering Questionnaires

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- Administering questionnaires has two main questions:
  - Who in the organization should receive the questionnaire
  - How should the questionnaire be administered

# Ways to Capture Responses When Designing a Web Survey (Figure 4.13)

Name	Appearance	Purpose
One-line text box		Used to obtain a small amount of text and limit the answer to a few words
Scrolling text box		Used to obtain one or more paragraphs of text
Check box	<input type="checkbox"/>	Used to obtain a yes-no answer (e.g., Do you wish to be included on the mailing list?)
Radio button	<input type="radio"/>	Used to obtain a yes-no or true-false answer
Drop-down menu		Used to obtain more consistent results (Respondent is able to choose the appropriate answer from a predetermined list [e.g., a list of state abbreviations])
Push button		Most often used for an action (e.g., a respondent pushes a button marked "Submit" or "Clear")



# Methods of Administering the Questionnaire

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- Convening all concerned respondents together at one time
- Personally administering the questionnaire
- Allowing respondents to self-administer the questionnaire
- Mailing questionnaires
- Administering over the Web or via email



# Electronically Submitting Questionnaires

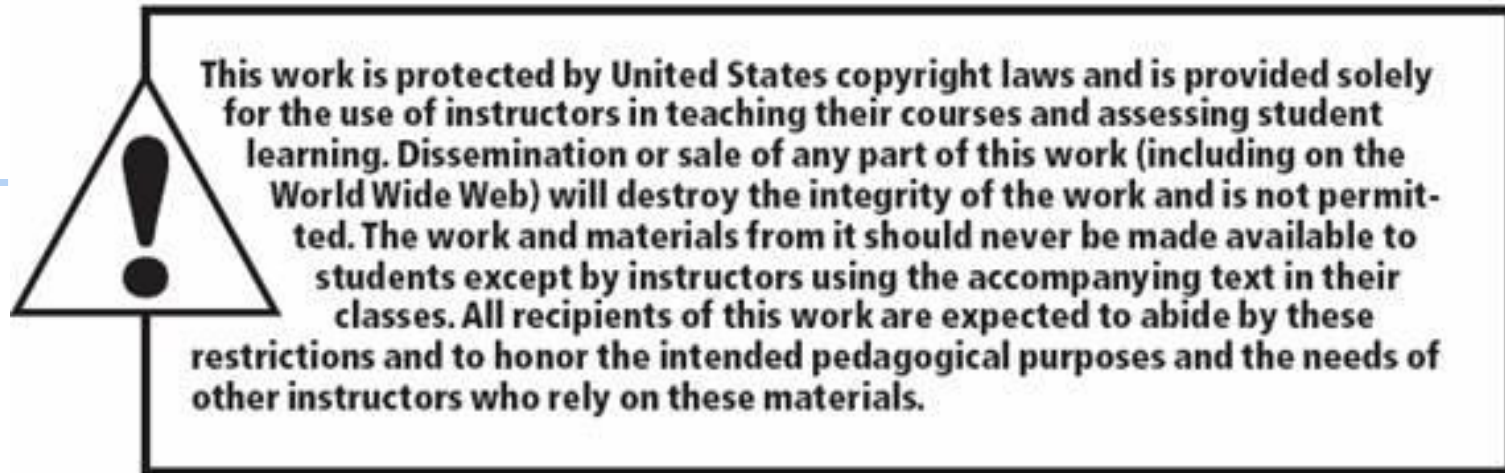
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- Reduced costs
- Collecting and storing the results electronically

# Summary

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- Interviewing
  - Interview preparation
  - Question types
  - Arranging questions
  - The interview report
- Stories
- Joint Application Design (JAD)
  - Involvement and location
- Questionnaires
  - Writing questions
  - Using scales and overcoming problems
  - Design and order
  - Administering and submitting



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