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Systems Analysis and Design,

Information Gathering: Interactive Methods



Objectives

- 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

- Interviewing
- Joint Application Design (JAD)
- Questionnaires

Major Topics

- 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

- 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

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



Question Types

- Open-ended
- Closed



Open-Ended Questions

- 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

- 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)

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



Disadvantages of Open-Ended Questions

- 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

- 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

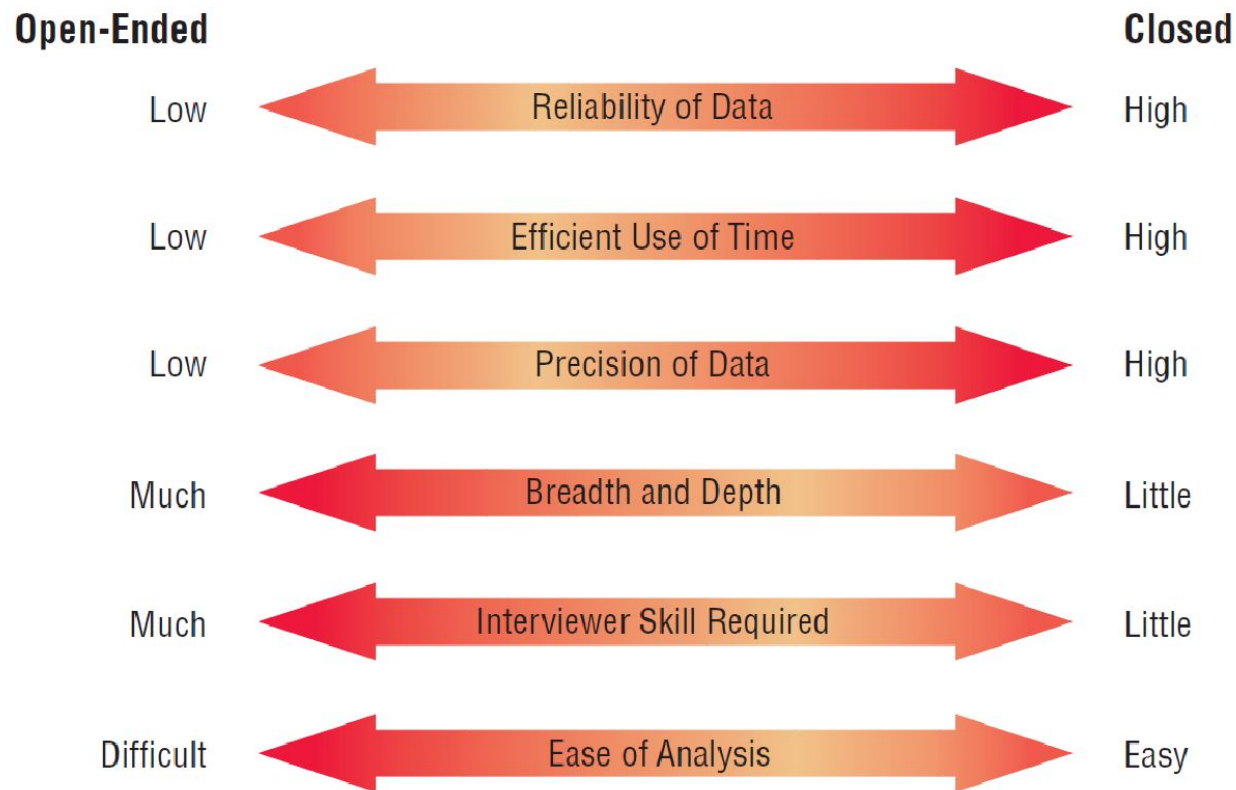
- Saving interview time
- Easily comparing interviews
- Getting to the point
- Keeping control of the interview
- Covering a large area quickly
- Getting to relevant data



Disadvantages of Closed Interview Questions

- 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

- 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

- 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

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- Why do you think that is?
 - What sort of impact do you think this will have?
 - What would need to change in order for you to accomplish this?
 - Do you feel that that is right?
 - When have you done something like this before?
 - What does this remind you of?

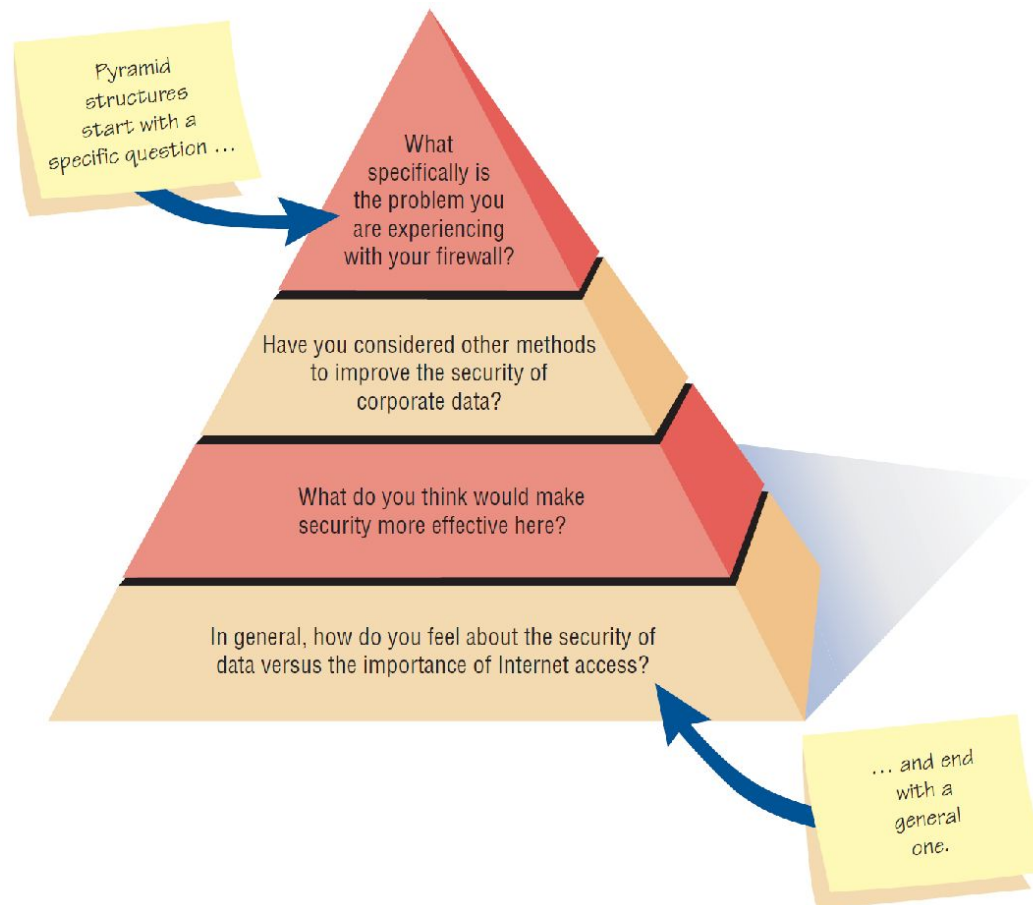
Arranging Questions

- 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

- 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)

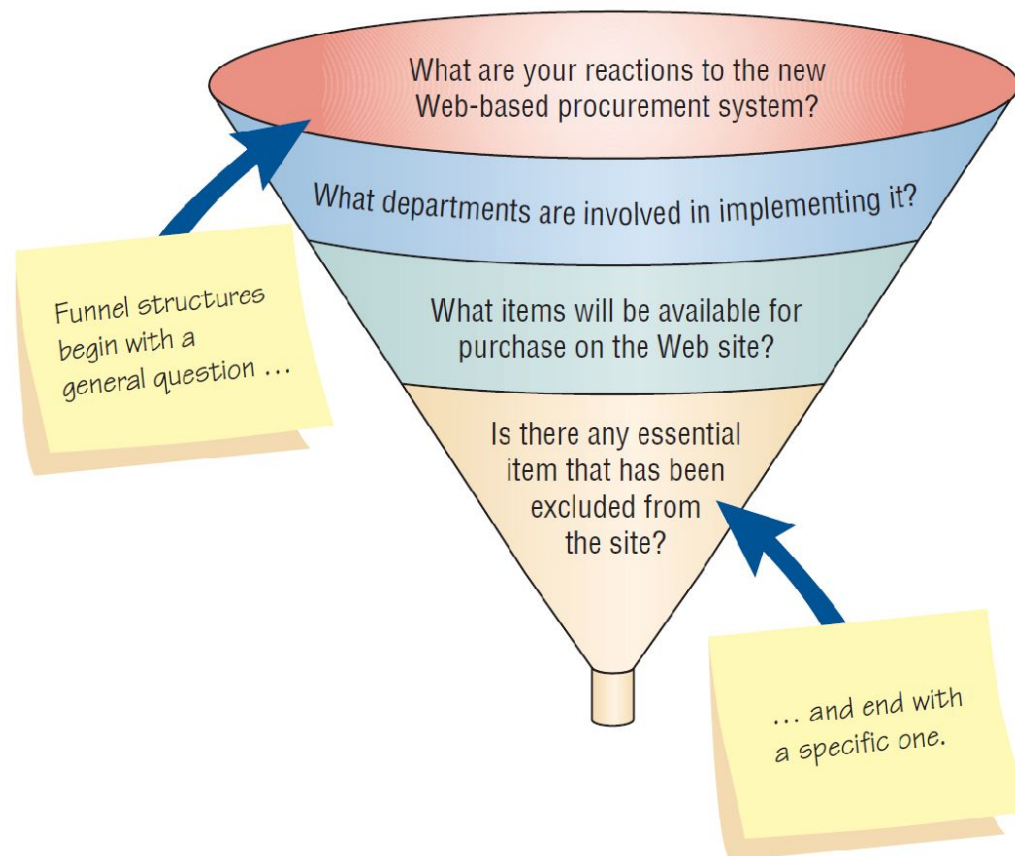




Funnel Structure

- 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)

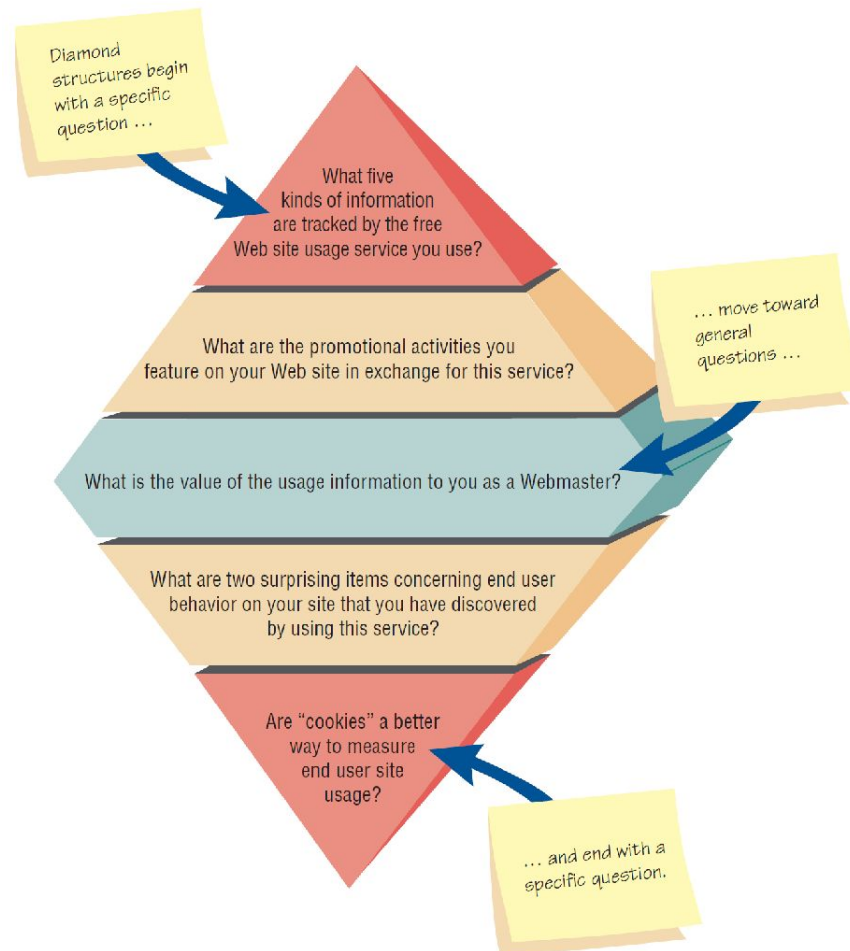




Diamond Structure

- 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

- 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

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



Stories

- 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

- 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)

- 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

- 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

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

Where to Hold JAD Meetings

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

Benefits of JAD

- 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

- 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

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

- Attitudes
- Beliefs
- Behaviors
- Characteristics



Planning for the Use of Questionnaires

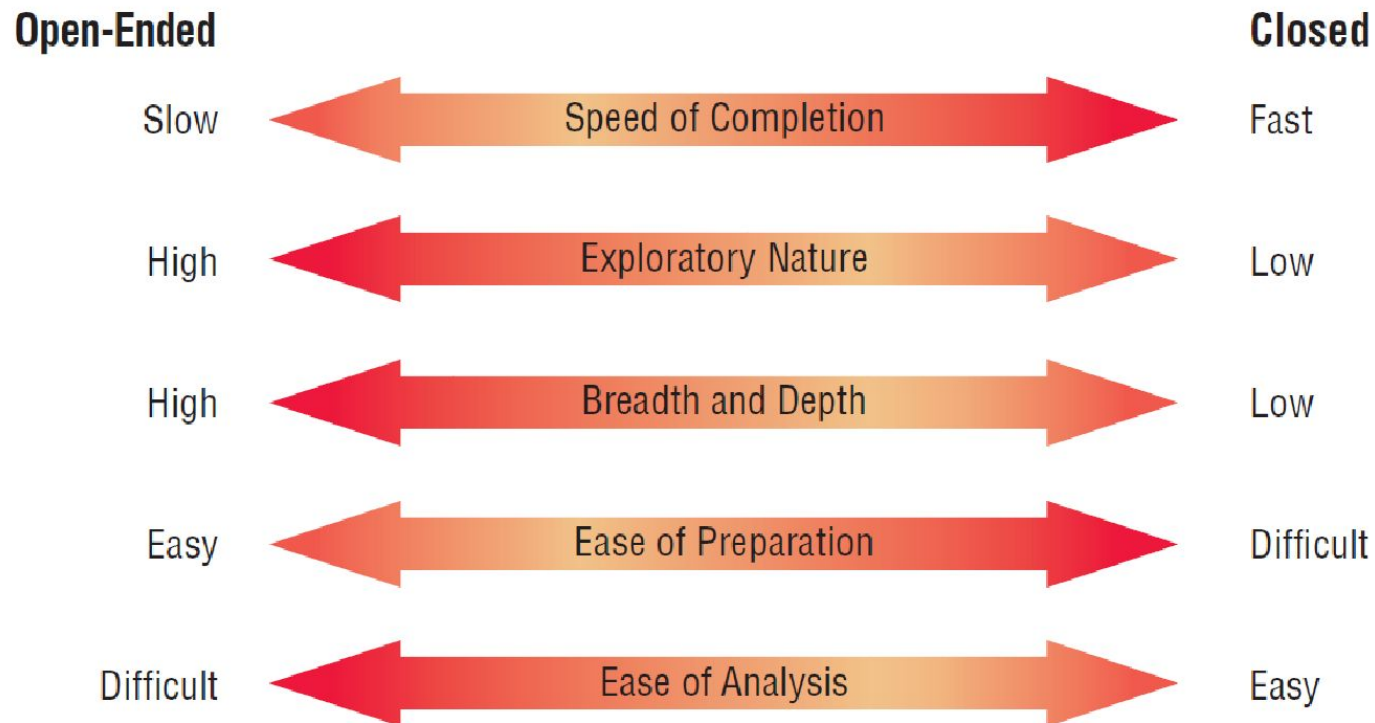
- Organization members are widely dispersed
- Many members are involved with the project
- Exploratory work is needed
- Problem solving prior to interviews is necessary

Question Types

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

- 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

- 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

- 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

- Leniency
- Central tendency
- Halo effect

Leniency

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

Central Tendency

- 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

- 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

- 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






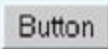
Order of Questions

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

Administering Questionnaires

- 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

- 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

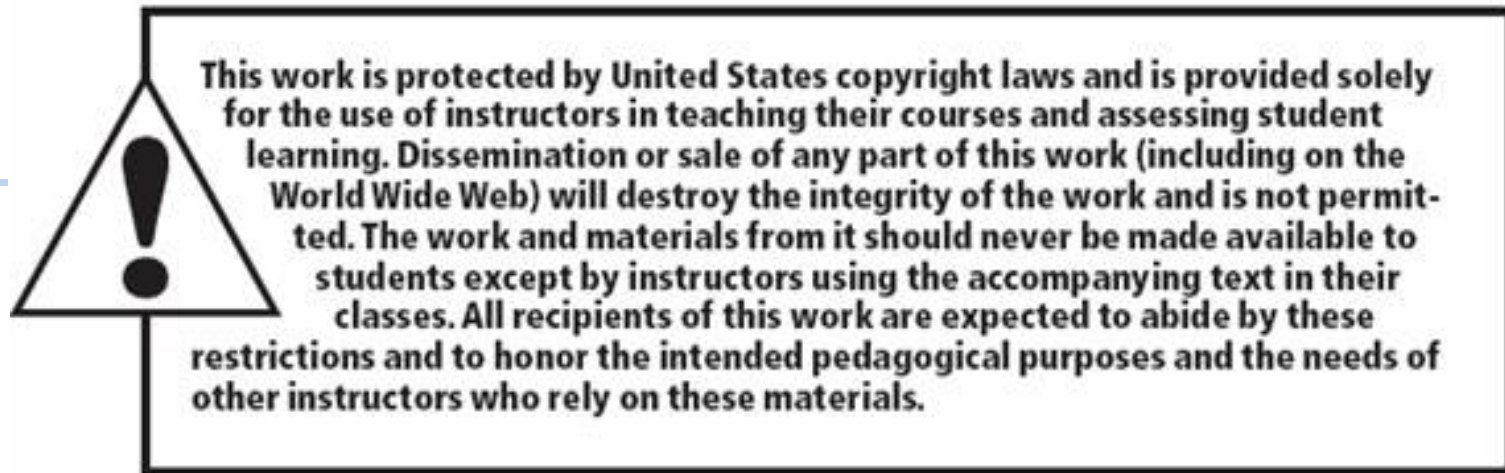


Electronically Submitting Questionnaires

- Reduced costs
- Collecting and storing the results electronically

Summary

- 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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