Announcement

Exam 2 is scheduled on Tuesday, **Nov. 7, 1:15pm - 2:30 pm** in class through Blackboard

Cover materials until Nov. 2

Most of materials from class lecture notes

Open-book and open-notes

Make-up exams are not allowed except excusable absences (http://bulletin.sc.edu/content.php?catoid=52&navoid=1280#Attendance_Policy) with appropriate documentation and advanced notice.

Reminder: Extra Credit – Group Assignment

- A written report summarizing the outcome from the design alternative presentations
  - What are the major concerns from the audience?
  - What are the feedbacks from the audience? You can use some statistics to summarize the feedbacks.
  - How would you propose solution to address the concerns?
  - How would you incorporate the feedback to improve your design?
- Up to 2 points towards your final grade
  - calculated based on the written report and the peer evaluation
- Due: 11:59pm, Friday, Oct. 13, in Blackboard

Common Issues in Exam 1

Confusion between design guidelines based on attention and the four factors of selection attention

- Make information salient
- Use techniques like animation, color, underline, ordering, sequencing, and spacing of items to achieve attention
- Avoid cluttering the interface with too much information
- Search engines and forms should use simple and clean interfaces

Common Issues in Exam 1

Six design principles:

1. Visibility – Can I see it?
2. Feedback – What is it doing now?
3. Affordance – How do I use it?
4. Mapping – What is the relationship between things?
5. Constraint – Why can't I do that?
6. Consistency – I think I have seen this before?

Common Issues in Exam 1

Which is **NOT** an answer why it would be a bad idea to re-arrange the letters on a computer keyboard

a. It violates the long term memory
b. It violates the working memory
c. It violates the design principle of consistency
d. The keyboards are standardized

Common Issues in Exam 1

There are four factors affecting figure-ground perception. Which factor is the best answer to explain the following picture?

a. Size of features
b. Symmetry
c. Meaningfulness
d. Layout

Today's Agenda

- Evaluation methods
  - Survey

EVALUATION

What is Evaluation

Evaluation, in general…

- Gather data about the usability of a design for a particular activity by a specified group of users

- **Goals**
  - Assess extent of system's functionality
  - Assess effect of interface on user
  - Identify specific problems with system

Forms of evaluation

- **Formative (predictive) evaluation**
  - As project is in progress. All through design lifecycle. Early, continuous, and iterative.
  - “Evaluation of the design”
- **Summative evaluation**
  - After a system has been finished. Make judgments about final product.
  - “Evaluating the implementation”

Evaluation Methods

Pre- & Post-prototype

- **Surveys: questionnaires**
- **Surveys: interviews**
- **Surveys: focus groups**
- Task Analysis

Post-prototype

- Heuristic evaluation
- Personas
- Cognitive walkthrough
- Card Sorting
- Field/ ethnographic
- User testing

SURVEYS & QUESTIONNAIRES

Lecture adapted, in part, from Dr. Philip Kortum

Comparison of Survey Methods

Standardized

Questionnaire

Structured Interview

Semi-Structured Interview, Focus Group

Conversational / Natural

Unstructured Interview

Questionnaires

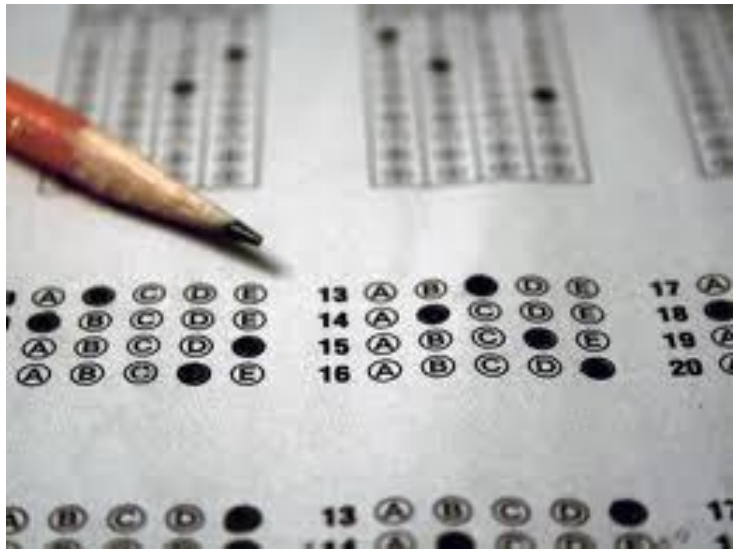
Surveys capture information about the individual

- Demographic data
- Preference and attitude data
- Performance and use data

Questionnaires

Two fundamental types of questionnaires:

1. Standardized (examples?)
   - IQ
   - ACT/SAT
   - LSAT
   - NASA-TLX
2. Custom
   - You create your own



Standard Questionnaires

- Usually have validity and reliability measures
  - **Validity** – "the quality of being well-grounded, sound, or correct" in Merriam-Webster
  - **Reliability** – "the extent to which an experiment, test, or measuring procedure yields the same results on repeated trials" in Merriam-Webster
- Comparative data is available from other studies
- Cannot collect product specific information

Custom Questionnaires

- Can collect specific information (e.g., specific problem or product)
- Must establish validity and reliability measures
  - FYI: Some statistical measures to test reliability
  - ** Pilot pilot pilot!
- Cannot compare to other studies

Qualities of a "Good" Questionnaire

1. The responses to the questionnaire help meet the objectives of the research
   - This is important!
2. It has high reliability & validity
3. It is easy for the users to take (ideas?)
   - Easy to understand
   - Maintains the users interest throughout the questionnaire
4. It is easy to administer (ideas?)
5. It is easy to analyze

Steps in Developing a Questionnaire, Interview, or Focus Group

1. Decide what information is required.
2. Define the target respondents.
3. Choose the method of reaching your target respondents.
4. Decide on question content.
5. Develop the question wording.
6. Put questions into a meaningful order and format.
7. Check the length of the questionnaire/interview/focus group.
8. Pre-test the questions.
9. Develop the final survey form.

1: Decide What Information is Required

Notice we don't start by writing questions!

- What are the objectives of the study?
- What information is needed to meet these objectives?
  - Don't be tempted to collect "everything but the kitchen sink"
  - What have other researchers asked?
  - What do you already know?

2: Define the Target Respondents

- Target audience makes a big difference in how you construct the questionnaire
- Experts and non-experts speak a different language **– think about jargon!**
- Specialized language carries meaning for experts
  - Do you need 2 surveys/interviews?

3: Choose Method of Reaching Your Target Respondents

- Personal interviews
- Group interviews (focus groups)
- Telephone interviews
- Mailed questionnaires
- Online questionnaires

4: Decide on Question Content

- Questions should be pertinent to the research questions
- Sometimes, you need to start with a 'neutral' question
- May need questions to hide the purpose of the research
  - Image you are testing a prototype of a video conference software with poor video quality
    - Ask about the quality of the conversation, the audio, etc.
    - Kept users from focusing on the video quality only
    - Why?
    - Recall confirmation bias in decision making

5: Develop the Question Wording

- **4** types of questions
  - Closed-ended questions
  - Open-ended questions
  - Open response-option questions
  - Likert-scale questions

5: Develop the Question Wording: Closed-ended Questions

Ask a question and provide a set of possible answers

- What do you like the most about this interface?
  - A) Color scheme
  - B) Layout
  - C) Functionality
  - D) Ease of use

5: Develop the Question Wording: Closed-ended Questions

- What do you think are pros and cons?
- Pros
  - Does not rely on memory
  - Easy to indicate answer
  - Analysis is very easy
    - Limits the answers to a defined set
- Cons
  - Can’t give other responses
  - Answers suggest alternatives that the user may not have considered
  - Researcher must have a good idea of the likely answers

5: Develop the Question Wording: Open-ended Questions

Just the question, no suggested answers

- “What do you like the most about this interface?”

5: Develop the Question Wording: Open-ended Questions

- What do you think are pros and cons?
- Pros
  - Allow the user to construct their own answer
  - Can reveal what issues are most important to the user
  - Captures items that may not have been considered by the researcher
- Cons
  - Difficulty articulating response
    - May forget important points in their answer
  - Answers to the question can vary in dimension
  - Analysis is very difficult

5: Develop the Question Wording: Open-ended Questions

- Challenges in open question range of responses…. Answer the following:
- When did you upgrade to Windows 10?
  - When my old computer died
  - When I bought my new computer
  - 6 days ago
  - Pretty recently

5: Develop the Question Wording: Open-ended Questions

- Some solutions to the cons
  - Provide hints, examples to guide the responses
    - What are problems with this solution?

5: Develop the Question Wording: Open Response-Option Questions

Combines the closed and open ended question types

- What is the best aspect of this interface?
  - It is really fast
  - It is really accurate
  - It is really pretty
  - Other? _____

5: Develop the Question Wording: Likert-Scale Questions

- Collect information on opinions and attitudes
- Uses scales of agreement, satisfaction, etc.

When approached with a new technology, I tend to be the last of my peers to begin using it.

☐1	☐2	☐3	☐4	☐5	☐6	☐7
Extremely Unlikely	Quite Unlikely	Slightly Unlikely	Neither	Slightly Likely	Quite Likely	Extremely Likely

Tips:

- Likert scales always have a true neutral!
- 5 or 7 responses options are most common
- "Likert-like" when no neutral (e.g., four responses / no neutral)

5: Develop the Question Wording: Question Considerations

- Can the user answer the question?
  - User doesn't know
  - User can't articulate an answer
    - What is the single biggest improvement we could make to Window 10?

5: Develop the Question Wording: Question Considerations

- Are there external events that bias the answers?
  - After recent news about cyber attacks, responses about security would be elevated
  - Car accident
    - When asked about the most important aspect of a new car, the respondent answers “safety”
    - Before the incident, this may not have been at the top of their list

5: Develop the Question Wording: Question Considerations

- Is there ambiguity in the question?

How bad was your last car accident?

Really bad **Bad** **Not really bad** **Not bad at all**

2 respondents, who both dented the front bumper slightly, no injury…

5: Develop the Question Wording: Question Considerations

- Is there ambiguity in the question?

How bad was your last car accident?

Really bad Bad Not really bad Not bad at all

Respondent 1: 'Really Bad'

- *"I'm only 16, it's my first accident and it was my dad's new sports car, and I wasn't on the insurance for the car."*

Respondent 2: 'Not bad at all'

- *"Well, compared to that 23 car roll-over collision I had with that nuclear-fuel carrying semi last month, this was nothing!"*

How could we fix this?

5: Develop the Question Wording: Question Considerations

- Is there ambiguity in the question?
  - Do you regularly scan for computer viruses?
    - What is ‘regular? Once a day? Once a week? Once a year?
  - How many files are on your computer?
    - Only user created files?
    - Hidden files?
    - Program files?
    - System files?