Part I:

Why test interface with users? Only real users can uncover some of the problems!

Types of informal testing with users:
- Observation techniques
  - Record user performing tasks
  - Record "Think-aloud protocol" while user performs tasks
- Query techniques
  - Questionnaires
  - Interviews

Before starting any kind of informal test, you need to:
- Choose users to test
- Choose tasks to test
- Prepare "interface" to be tested
- Choose type of data to collect
Choosing people to test:
• best to get representative users
• follow ethics:
  • avoid distressing test users (no tears, no ambulance)
  • avoid embarassing test users
  • get informed consent: free to stop anytime
  • maintain privacy in data
  • Institutional Review Board approval required at most institutions (including UNCG)

Choosing tasks to test:
• Don't test separate tasks
• Suites of related tasks (as in a scenario)

Prepare "interface" to be tested:
• Pen and paper drawings of screens
  • OK as long as not testing functionality not yet supported (e.g. not suitable to test ease of use of GUI for drawing)
• Prototypes
  • More realistic but can be expensive to implement
• Wizard of Oz
  • Have person behind the scenes performing the unimplemented parts of the system
• Example: faking speech recognition with a human typist

Choose type of data to collect
• Process data: data about steps user takes and why?
• "Bottom-line" data:
  • a summary of what happened as in usability specification, e.g.
    • how long did task take?
    • how many errors did user make?

Process data sometimes more useful than bottom-line data for interface designers
• if users have problems, designers need to know where in task and why?

Recording technologies:
• pen & paper: cheap, but requires experience not to miss details
• audio: more intrusive, more accurate, effort to transcribe
• video: more intrusive than audio, collect fine-grained data, very high cost of transcription
• automatic recording of user actions (keystrokes, mouse actions, etc.) by system
• for formal usability studies: hidden cameras, eye-tracking equipment

Warning about "Hawthorne effect": people may alter their normal behavior when they know they are being observed!

Record
• user performing tasks
• and (optional) user "think-aloud protocol"
Part II. Think-aloud protocol

- users talk to you while they work
- provides "process data", not "bottom-line" data
- real-world example: Inexperienced users confused because they thought "parameter" in documentation meant "perimeter"
- hard to collect both "process data" and "bottom-line data" simultaneously

Instructions to users for think-aloud protocol recording:

- ask them to tell you what they are thinking while they work:
  - what they are doing or trying to do
  - what they are reading on the screen
  - what they think is happening
  - questions they have while they are working
  - no deep or private thoughts
- Tell them you will not answer their questions unless they absolutely cannot continue working on task
- encourage them to talk but be careful not to influence their work:
  - "Tell me what you are thinking", "Keep talking"
  - NOT: "What do you think that button is for?"
In-class exercise: record think-aloud protocol while searching for csc540 Reserve List on library web page

Part III: Questionnaires
• Advantages: can reach many users easily
• Disadvantages:
  • hard to design so that answers are meaningful
  • those who answer may not be representative users (e.g. web surveys)
  • user's may not be able to explain real reasons or preferences
    • Example: most people preferred the 3rd choice of 3 identical pantyhose (recency bias)

Types of questions:
• Open-ended
• Closed: provides choices for answer
  • Alternatives: e.g. Yes/No/Don't know
  • Multi-point scale: e.g. 1 - 5, where 1= no use and 5= very useful
  • Ranked: e.g. which is more important to you: candy mint or breath mint
Design of questionnaires:

- Short as possible
- Easy to reply (e.g. email)
- Guarantee privacy for sensitive data (e.g. income)
- Simple & consistent & unambiguous wording
- Perform pilot study of questions
- Plan statistical analysis before collecting data so the right kind of questions are included

See web page on questionnaires (link from course web page)